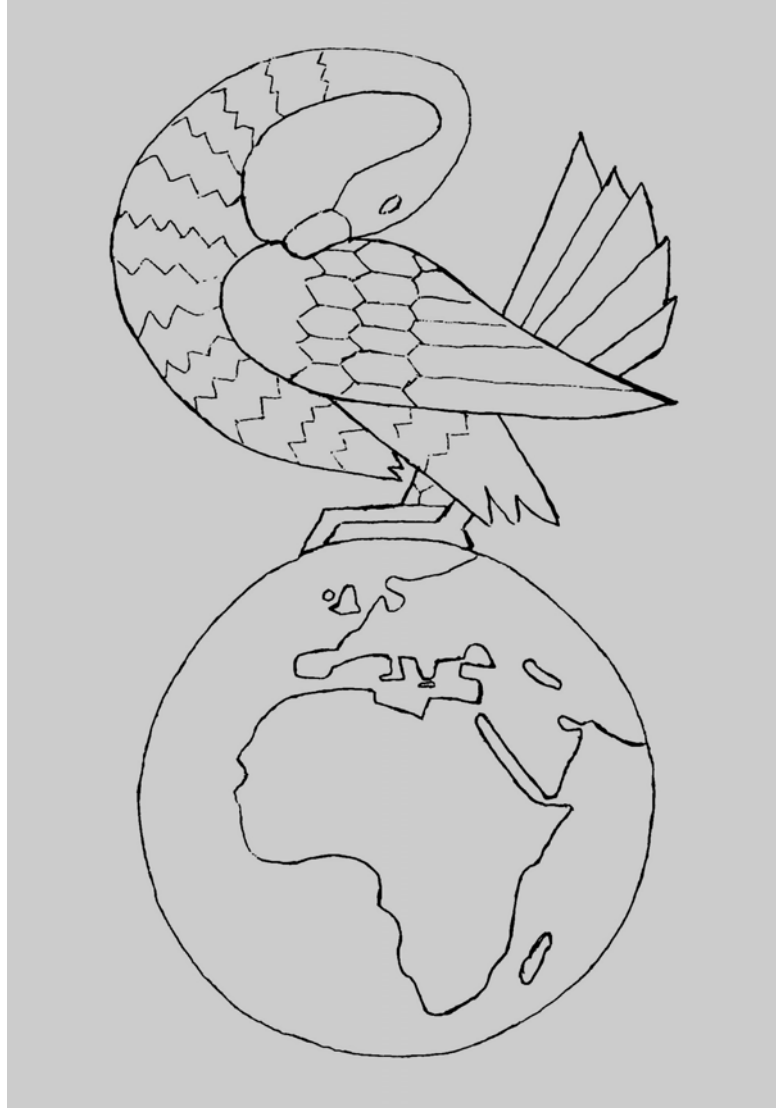


JOHN COLLINS



# African Musical Symbolism In Contemporary Perspective

(Roots, Rhythms and Relativity)

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(Roots, Rhythms and Relativity)

By John Collins

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## FORWARD

This book endeavours to make comparisons between pre-industrial African worldviews and those of the contemporary and post-industrial world—both contrasts and correspondences. I put particular emphasis on the similarities between traditional black African beliefs and advanced areas of Western thought. To do this involves a high level of generalisation so please do not always take these comparisons literally, as they also represent my own subjective and lyrical attempt to tie together personal insights gathered from a number of diverse life experiences. My experiences include a deep interest in the social and natural sciences, a love of African American and African dance-music, and the good fortune to have lived in West Africa for many years.

My interest in the natural sciences goes back to a childhood fascination for astronomy and biology. I graduated with a degree in science in the United Kingdom. By the early 70's I had obtained a second degree at the University of Ghana, specialising in archaeology and sociology, and a PhD in Ethnomusicology at the State University of New York at Buffalo. Later, while living in Ghana, I would teach chemistry and physics for seven years in Ghanaian secondary schools.

It was in 1952 that my father, the late Edmund Francis Collins, together with my mother and two brothers, first took me with him to Ghana where he helped establish the Philosophy Department at the University of Ghana. After a year, my mother returned to the UK with my brothers and myself. My father stayed behind and eventually married a Ghanaian woman whom we called Auntie Amma. He went on to build two homes in Ghana and died there in 1991.

In the UK, I had played in several jazz, blues and rock bands so when I returned to Ghana in 1969, I began working as a guitar and harmonica player with local bands. When I first went to meet my stepmother Auntie Amma, one of the tenants renting a room in her house was Mister Bampoe, the leader of the highlife band called the Jaguar Jokers. As soon as we met he

talked me into touring with his band for two weeks. Being white, I was a novelty in the countryside and the musicians and actors took full advantage of that fact to draw in the crowds. They would sit me and my guitar atop a touring bus and parade me through the villages while advertising the group over a loudspeaker as a conga player beat out an inviting rhythm. It was the musicians of the Jaguar Jokers who taught me how to play highlife, merengue, Congo jazz (or soukous), Afro-beat and local folksongs, as well as "copyright music", cover versions of mainly black American and Caribbean pop-music such as ska, soul and reggae.

From the Jaguar Jokers I moved on to play, work and record with numerous Ghanaian and Nigerian bands and musicians including: Francis Kenya, E.T. Mensah, Koo Nimo, Abladei, Fela Anikulapo-Kuti, Victor Uwaifo, Kwaa Mensah, Bob Pinodo, the Bunzus, the Black Berets, T.O. Jazz, S.K. Oppong and Atongo Zimba. I also learnt to play the old acoustic palm-wine version of highlife and my principal teachers were Kwaa Mensah, Koo Nimo, Lincoln Deku and T.O. Jazz.

During the 1970's I lived at Temple House in the downtown fishermen's area of Accra called James Town where I managed my 12-piece band called Bokoor Guitar Band. We released 20 songs on the local market (two have been re-released on CD: the Afro Beat *Onukpa Shwarpo* by Kona Records of London and the highlife *Yaka Duru* by the US/Hong Kong company NAXOS).

Rebel soldiers staged a coup in 1981 and for the next three years the enforced curfew grounded my band and other commercial bands. Therefore, in 1982, I built a recording studio from mud bricks on my father's farm in Ofankor and christened it the Bokoor Recording Studio. We released about 70 commercial songs from the Bokoor studio during the 80's and 90's. (Three have recently been re-released on CD: *Guitar and Gun* from Earthworks/Sterns of London, *Electric Highlife* from NAXOS and *Vintage Palm Wine* by Otrabanda of Holland).

In 1990, I helped establish a Non-Governmental Organisation (NGO) called the Bokoor African Popular Music Archives Foundation (BAPMAF) with veteran musicians. In 1995, I began teaching in the Music Department of the University of Ghana at

Legon and was appointed head of the department in 2003. At the university, Aaron Bebe Sukura and I formed an acoustic highlife band called Local Dimension which released a CD in 2003 called *N'Yong* on the Paris Disques Arion label.

In the late 1970's, I also started to learn traditional African percussion – initially to help me play modern African music, which makes great use of traditional rhythms. Later I gradually grew passionate about the percussion itself and I was most inspired by my three main drum teachers: the late Dan Bokovi Banini, Kpani “Gasper” or “Sakora” Tettey-Addy and the late Michael Kojo Ganyoh.

Delving into traditional percussion began me thinking about rhythm and the people I met in Britain where I was staying for a while in 1979-80 with some members of my Bokoor Band made me compare Western, African and West Indian music. At the time myself and the two other Bokoor Band members were staying in Wolverhampton, a city in the midlands of Britain, where we helped teach unemployed Caribbean youth African music and Black Studies. It was through this work, as well as becoming friends with some of the organisers of the Caribbean self help group, Harambee Two, that I learned firsthand about the Rastafarian critique of white Western civilisation – what they refer to as “Babylon”.

Finally, I should point out to the reader that in the first section of this book I am not focusing on a particular African culture, or comparing the many differences between African communities, I am rather attempting to deal with the broad similarities within traditional African cultures, including features taken to the New World by African slaves during the Black Diaspora.

John Collins, Bokoor House  
Accra, Ghana





## INTRODUCTION

This book examines why the earthy and so-called “primitive” dance-music of black people has crossed all international frontiers and gone global. In spite of the technological supremacy of the West its dominant popular music today is largely derived from the very people that it enslaved in the Americas and colonised in Africa.

This musical crossover began in the Americas where, over the last hundred years or more there has come a continuous stream of international dance-crazes from foxtrot to funk, ragtime to reggae and samba to soul. At the back of all these black and white fusion styles lies Africa. Examples of this ancestry abound: the drumming groups of Congo Square in nineteenth century New Orleans, the home of jazz; the Yoruba cult music of Cuba and Brazil; the Maroon songs of Jamaica and Surinam; the Voodoo drumming of Haiti, not forgetting many of the present generation of African American and Caribbean artists who are consciously turning back to their African roots.

Since the 1950's music coming directly from Africa has also begun to catch on with Western audiences and dance fans. It started with the South African Kwela music and Township Jazz of Miriam Makeba<sup>1</sup>, Ibrahim Abdullah (Dollar Brand) and others who influenced the international jazz fraternity. This was followed in the 1970's by West African Afro-rock and Afro-beat and culminated in the World Music explosion that is reverberating in all four corners of the earth today.

To understand why the music of Africa and its Black Diaspora has become the folk music of our age one also has to ask the question as to why the elite symphonic and art music of the Europeans, who initially developed technology, declined. For it is now largely an exclusive highbrow music maintained in

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<sup>1</sup> Makeba was the first internationally recognised African women pop music star. Since the 1960's numerous other female stars have followed; many coming from a traditional music background (such as the West African griots or jalis) or from the local gospel of the African Christian Churches.

prestigious concert-halls and conservatories and supported by government grants.

Black popular music never had this assistance. Indeed, in the United States between the two World Wars there was even an unsuccessful attempt to prevent the “contamination” of white youth with jazz, blues and other African American forms of the “devil’s music”, through a musical apartheid or “race-record” policy.

Nevertheless black music and dance came to stay. In fact its waxing exactly coincides with the waning of Western art music, for the very first cross-over Afro dance-music craze was ragtime, just before the turn of the twentieth century. This was precisely the time when modern European art composers began experimenting with dissonance, atonalism, serialism and generally decomposing classical harmony, thus making an already high-brow music even more inaccessible to the general public. It is the so-called lowbrow dance-music of ragtime, rock, rumba and rap that filled the vacuum.

However, the fossilisation of elitist white music is only half the reason for the worldwide success of black music and dance. Another is that, paradoxically, although it has its roots in the “dark continent” African derived music is more in tune with the relativistic and participatory paradigms of post-industrial society than is classical art music, stuck in the deterministic and hierarchical ethos of a mechanistic age.

Whereas monodic<sup>2</sup> classical music focuses on a single metre and melody, black music consists of a plurality of different contrapuntal voices and rhythms. One only has to think of the three interweaving front-line instruments (trumpet, clarinet and trombone) of the early jazz bands, the call-and-response of the blues and spirituals, the criss-crossing beat of Afro-rock or the overlapping of rock music with ska and reggae by new wave bands in the 1980’s. As Dave Wakely, the white guitarist for one

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<sup>2</sup> The monodic style developed in the baroque music period of Europe in the seventeenth century in association with opera and then symphonic music. Unlike the earlier multi-vocal and multi-melodic “counter-point” style of Medieval and Renaissance times the monodic style focused on one single melody, buttressed by other instruments or voices providing a harmonic background.

such band called The Beat once explained, “we got a cross-rhythm going, me striking down while Andy (the Jamaican guitarist) goes up, which creates a third rhythm of its own”.

All this modern musical relativity, whether played by blacks or whites, largely stems back to the cross-rhythms and polyphony of Africa. Europe did once have polyphony, in the form of medieval and renaissance counterpoint, but it was eclipsed by the monody of the eighteenth-century classical style. Therefore, in a sense one could say that black music has reintroduced Europeans back to musical multiplicity.

Black musical relativity not only applies to its webs of cross-rhythms, but also to the rhythmic spaces enmeshed in them, for both the silent offbeat as well as the sounded onbeat is given equal weight in the overall percussive composition. Indeed, without this heightened African awareness of hidden musical space the black slaves in the New World would never have been able to so successfully transmute their master’s music into their own idiom; which they did by simply colonising the intervals that the Europeans ignored in their own music – with its overstated onbeat and conductor’s down-stroke. In a nutshell, black musicians turned white music inside-out and syncopated<sup>3</sup> it: “ragged” it, “jazzed” it and “skanked” it. Moreover, by so doing they provided musical breathing space or swing for themselves – and as it turned out for whites and the whole world as well.

Not only the black music of the Americas but also music coming directly from Africa has been supplying the world with inspirational space for some time now. It has influenced minimalist art composers such as the Americans Steve Reich and John Cage. The English pop-musician Brian Eno, who visited Ghana in 1980, said at the time that African music “leaves holes in all the right places”. According to one pop journalist, the famous white reggae influenced band, Police, was “an ardent exploiter of gaps in music, always exploring the bits around the beat rather than the beat itself”, which explains why some members of this band (like Stuart Coplan and Sting) later visited

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<sup>3</sup> This means that the rhythmic emphasis was put on the offbeats that were usually unstressed in Western music.

Africa. Another music reviewer calls black American rap “grill music” containing gaps and “hip hop hold-ups”. In addition, its associated break-dancing goes all the way back to the freezes and pauses of traditional African dance.

Unlike European symphonic music with its overstated onbeats, over-bearing conductors and over-awed audiences, the pluralism and swing of African and African-derived music leaves room for everyone to participate and improvise: including the dancer and audience. This is why African master-musicians do not, like classical virtuosos and romantic music-maestros, try to steal the whole show. They rather have the laid-back approach that is needed to balance the communal and the individual, control and creativity; or in African American terms they harmonise the spontaneous “Heat of the Beat” with the collectedness of “Daddy Cool”.

Besides over centralisation and overstatement, another feature of industrial Europe’s mechanistic ethos is overspecialisation. This is reflected in the compartmentalisation of its performing arts into music, dance, drama, poetry, sacred, secular, lowbrow entertainment, and highbrow enlightenment. The present post-industrial ethos of our information age on the other hand tends towards holism and integration and this too is expressed in music; particularly in black derived styles of popular performance in which music, dance, theatre, poetry (rapping and toasting) are all fused into a multimedia show.

For instance, the spiritual side of things is catered for by hot gospel, soul<sup>4</sup> and Rastafarian music, which merges into the secular body music of disco, funk, hip hop and reggae. Similarly profane jazz grew out of African American ancestor worship and funeral bands. Conversely the blues and spirituals evolved from work-songs. All this and more is combined together in the street parades and masquerades of Black Carnival and Mardi Gras where the whole community ritually celebrates by blowing off cathartic steam and poking fun at authority. These multimedia and multi-functional festivals are, in turn, partly based on the

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<sup>4</sup> It was from gospel and soul that many African American women gained an entry into popular music. Earlier than this were the professional black female stage singers of the spirituals, classic blues and big-band swing groups.

music, miming and masked dancing of Africa, whose master-of-ceremonies combine the roles of artist, priest, teacher, doctor, historian and social commentator.

Another way black and African musical holism is manifested is through circularity. Whereas European classical music follows the strict time of the score-line from overture to grand finale, black music proceeds in a series of more immediate and digestible harmonic motions. These include the twelve and sixteen bar cycles of the blues, the percussive alternations of on and offbeat, the riffs and repercussions of rock and rumba and the looped modes and rhythmic patterns of modern jazz and traditional African dance-music.

The circle or mandala is one of the oldest symbols for the harmony of opposites and this is why a curved musical sensibility is so prevalent in non- or pre-industrial societies. The rounds and catches of folk-music, twirling Sufi dervishes, the ragas of India, baroque canon-fugues, the Gamelan orchestras of Indonesia, the spiral dances of the ancient Mediterranean and the counter-clockwise ones of Africa. Thanks to African and African-derived popular dance-music this archetypal symbol of unity is musically back with us again in the contemporary world.

As mentioned earlier, the black music explosion from the early twentieth century coincided with the decomposition of European art music. However, this demise itself echoed the broader disintegration of European symbols. To understand this we have to first turn back to the optimism of the early industrial age.

This period was the heyday of classical music, by which time the earlier polyphony had been trimmed down to a single monodic melody, and time had been cut up into regularly accented bar-lines. It is no coincidence that it was around this time that the Protestant Reformation was battling the vestiges of polytheism they saw in the Catholic Church with its numerous saints, angels and Virgin Mary. For they wanted to reduce Christianity to the authority of a single Heavenly Maestro: or more precisely the masculine Trinity of the Father, Son and Holy Ghost (Spiritus).

In a parallel way classical scientists were busily reducing complex matter to a few atoms, corpuscles and other primary principles. These scientists were also replacing the astrological medieval celestial spheres that surrounded mankind with single, rigid and de-humanised space and time grid. All these religious and scientific ideas combined into a prevalent ideology of the relentless and straight-line march of history: European male history that is.

Where did the individual stand in this single-minded picture of reality? The eighteenth century French scientist Descartes ironically gave his dualist and schizophrenic answer; that mental freedom and material necessity were in no way connected and that priests and philosophers should concern themselves with the former and scientists with the latter. So for two hundred years scientists focused on substantial matter and treated mind as illogical, illusory and as a ghost in the predetermined clockwork machine. Indeed, the nineteenth century romantic art-works of the great composers and masters were industrial mankind's attempt to immortalise himself in a secular and materialistic age.

From the end of the nineteenth century, however, this neat and tidy separation between the imprecise mind and logical matter began to break down. Oddly enough this partly occurred through the very impersonal findings of scientists themselves, who, looking for final and unequivocal answers ended up with biological randomness, entropic flux and subatomic probabilities. Then Einstein discovered the relativistic observer, astronomers revealed multiple and cosmological frames-of-reference, mathematicians found new types of infinite open endedness and the rational Freud unearthed the irrational unconscious.

It is this scientific uncertainty and unpredictability that set the tone for the twentieth century, with its existential anxiety, identity crises, culture clashes, generation gaps and future shocks – not to mention two world wars and hundreds of local ones. Which is precisely why Jamaican reggae artists call the modern world "Babylon"; after the biblical Tower of Babel

whose builders reached for the stars but forgot how to talk to one another in the process.

With the break up of classical certainty into modern confusion there is now a search for new unifying symbols that can help us reintegrate mind and matter, the individual and the collective, the one and the many, freedom and necessity, old and new, beginnings and endings.

Some are coming from the cutting edge of science itself. In the hard sciences there are recent ideas concerning a cyclical reincarnating universe<sup>5</sup>, a curved cosmos, the unity of space-time, the interconvertability of matter and energy, holograms and the subjective "observer effect" on subatomic matter. Then there are psychological ideas on the gestalt self, existential choice, the collective unconscious and body/mind therapy. Furthermore, modern ecological studies are presenting notions of environmental feedback loops, poetically expressed as the Whole Earth Movement and Gaia Hypothesis.

Other holistic symbols are being retrieved from the past or are coming from the philosophies and religions of the Far and Near East. These include notions of a reincarnating Wheel of Life, a universal animating spirit, humanised astrological space and time and the unity of opposites found in Eastern mandalas and sacred circles.

The recent interest in the ethnic World Music and particularly the artistic wisdom of Africa and the Black Diaspora is also an important component of this trend. For African dance-music with its rhythmic relativity, creative swing, cyclical unity and participatory play is giving the world yet another key to the problems that we are facing in the Third Millennium.

In short, it is putting breathing space into an otherwise stifling materialist world.

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<sup>5</sup> From Big Bang to Big Crunch and back to Big Bang again in repeated cycles.





# SECTION ONE: ANCIENT AFRICAN WISDOM

## CHAPTER ONE: AFRICAN MUSIC AS MICROCOSM

### Theme One: Polarised Tension – The On and Offbeat

Musical polarities abound in African music. One is the call-and-response of cantor and chorus, or voice and instrument. Another is the alternate striking of hand, fingers or thumbs when playing everything from drums to lutes to hand pianos. This old oppositional technique has even been transferred to the African American banjo and the West African style of guitar plucking. Another example of musical polarism is that, unlike the single tone-centre (or tonic) of Western music, African melodies move between two-tone centres – which in the case of the Akan of Ghana are one full tone apart<sup>6</sup>.

Sometimes even instruments themselves are seen in the contrasting terms of male and female. One of the Akan twin-atumpan drums, the high-toned one, has breasts carved into it. Likewise the high and low notes of East African Azande xylophones and of double-headed West African Fon cowbells are called by female and male names. Conversely the Yoruba have their high-pitched “father” and low-pitched “mother” drums. This African gender dualism in music even survived in the United States, as the “mammy” right hand and “daddy” left hand of the jazz-drum pioneer Baby Dodds.

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<sup>6</sup> This would be, for instance, between C and D. In the West African savannah region the interval of a fourth is favoured (i.e. between C and F) and in Southern Africa another interval of the fifth (i.e. between C and G) is common.

African rhythms are also polarised. Indeed, the fundamental basis of all percussive rhythm, wherever in the world and however played, is the individual rhythmic strand made up of patterns of onbeats and offbeats, sequences of sounds and silent intervals. Western art musicians tend to put the emphasis on the onbeat notes and sounds, classifying offbeating as abnormal or syncopated. African musicians on the other hand treat both the sounded and silent side of percussive patterns as equally important.

This even-handed African sensibility was noted almost one hundred years ago by German musicologist and gestalt psychologist Erich Moritz von Hornbostel<sup>7</sup> who studied hundreds of cylindrical records of African music stored in the Berlin Museum during the 1920's. From his conclusions on analysing these old records he gave names to these rhythmic opposites. One is the acoustic drop or release, and the other is the motor lift or upward strain. In other words, the sound of the drum itself as the player's hand or stick falls and strikes it, and the relative silence in between as the hand or stick is raised against gravity. African percussionists weave their sound patterns out of this acoustic-kinetic warp and waft.

Hornbostel's idea of the active motor element only occurring on the upstroke (i.e. the offbeat), whilst the down-stroke (i.e. onbeat) is only a matter of gravity is, of course, highly simplified. It does not take into account the rebound effect off the drumhead, or the muting technique of forcibly holding down one hand or stick on the drum skin to alter the instrument's tone. However, his motor awareness concept is useful in helping explain some of the common features of African music. Its percussive nature, its rhythmic stresses and strains, its inseparability from dance and motion, and the fact that many non-musical activities, such as striking a hammer, pulling a rope, or pounding a pestle, may take on a musical form.<sup>8</sup> We shall return to this kinetic (i.e. movement) topic again in due course.

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<sup>7</sup> See Hornbostel 1928.

<sup>8</sup> Besides Hornbostel this motor-activity feature of African music has been noted by Merriam (1959), Lomax (1959), Kauffman (1980), Nketia (1963 and 1974) and Friedson (1996).

Besides the polarity of on/offbeat within one particular rhythm another type occurs when two rhythms are in dialogue with each other. This occurs as call-and-response, with the two rhythms either exactly punctuating each other's space, or somewhat overlapping each other. This leads us directly onto our next topic on cross-rhythms.

## Theme Two: Relativity – Multiple Cross-Rhythms

Although single rhythms are common to music everywhere, in traditional Africa rhythm takes on an added complexity as two or more strands of quite distinct rhythms (or sub-rhythms) are played simultaneously. This style is known as polyrhythmic, or polyphonal, when these strands are of a rhythmo-melodic nature<sup>9</sup>.

Modern European music is largely based on a single rhythm played in a single meter or time signature. Ghanaian musicians call this music “one way” and do not find it aesthetically pleasing, preferring their own traditional multi-rhythmic and poly-vocal approach. This stacking of separate voices is not only found in African music but in other traditional societies as well. The American musicologist Stephen Feld (1982) notes that in the case of the Kaluli people of Papua New Guinea, the pleasing layering of voices or “lift up over sounding”, as they call it, goes even one step further, for it not only includes musical sounds but also coincidental ambient sounds such as bird calls, animal cries, a baby’s chortle and so on.

The traditional African multi-vocal approach needs special skills to handle. The American musicologist James Koetting believed that experienced African musicians are aware of a “density referent”. This is the ability to create and hold a fastest pulse in their minds, which acts as a rhythmic common denominator, or scaffold for the various criss-crossing rhythms. This idea of a clock ticking away at the back of an African musicians mind is, of course, rather rigid and mechanical. The American musicologist and jazz bassist Richard Waterman<sup>10</sup> saw this rhythmic skill of African American and African musicians as a creative subjective reference pulse rather than as internal clockwork, even though he named it the “metronome sense”. This fits in with what the Ewe master-drummer Abraham Adzenyah calls the “hidden rhythm”, which he told the

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<sup>9</sup> In other words: cross-melodies rather than cross-rhythms.

<sup>10</sup> See Richard Waterman (1948).

American musicologist John Chernoff (1979) he employs whilst improvising.

So where does this skill come from? Is it innate and in the blood as some Europeans have suggested? Of course not. Like any other social skill it is something to be learnt: by the infant on the dancing mother's back, from the hundreds of rhythmic toys that abound in the continent and from the games that children play. The following four children's games from Ghana illustrate this latter point.

### *Ewe Children's Song*

The Ghanaian musicologist E.Y. Eglewogbe (1967) has noted that the most common rhythm used by Ewe children of Southeastern Ghana is based on the following polyrhythmic clap rhythm that contains in it both duple and triple time. The reader may ask how can it be polyrhythmic if only one rhythmic "time-line" is involved. The answer is that there is a simultaneous but unexpressed hidden rhythm made up of four evenly spaced subjective pulses that are sometimes danced out by the children. Although not notated, these four subjective pulses also occur in the other three cases of Ghanaian children's time-lines discussed below.

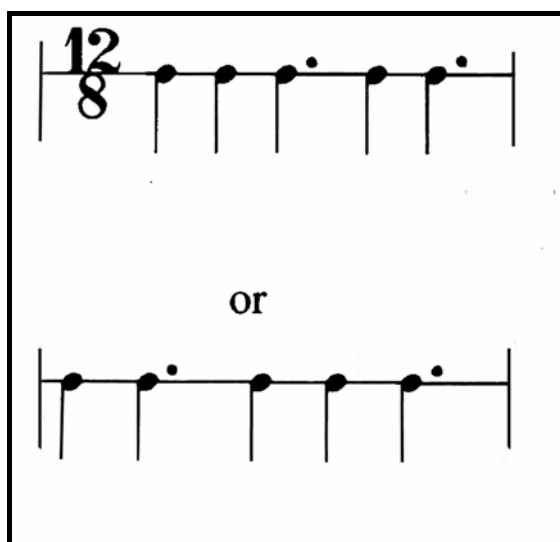


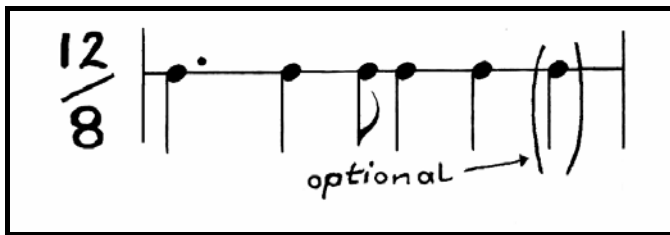
Figure 1: *Ewe children's song*

Interestingly enough this clap rhythm has the same pattern that the British musicologist Arthur M. Jones (1959) called the

"African Signature Tune". He studied East and West African music in the 1940's and 50's and in one form or another discovered it is found all over the continent.

### ***The Akan Children's Akoko Funu Rhythmic Game***

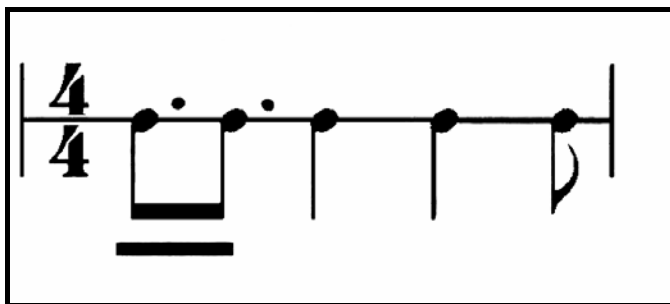
In this Akan game children pinch the backs of each other's hands until one of them gives up. They do this whilst singing a song that uses the metal bell or gong pattern of the polyrhythmic kete and adowa music of the court of the Asante (or Ashanti) king of Kumasi, in Southern Ghana.



*Figure 2: Akan children's song*

### ***The Ye-Ye Clapping Game of Ewe***

Ye-Ye is an Ewe game in which children clap, dance and sing to a bell pattern. The bell's rhythm goes as follows.



*Figure 3: The ye-ye game*

*It is the first two beats of the above rhythm (underlined) that are clapped out whilst the children cry out "ye-ye."*

The ye-ye beat is based on the gahu or agahu music that the Ewe people borrowed from Egun speaking people of the Benin Republic in the 1950's. As the gahu drum-dance will be mentioned again it is worth noting here its complex origins.

According to the ethnomusicologists Kobla Ladzekpo and Allan Eder, *gahu*<sup>11</sup> is a local development of goombay drumming created around the time the Egun speaking people saw their first aeroplane – thus the name iron (Ga) and vehicle (Hu.) goombay in turn was a Caribbean neo-African drumming style introduced to West Africa in 1800 by Jamaican freed slaves or “Maroons” who settled in Freetown, Sierra Leone, from whence it spread throughout the sub-region.

### *The Akan Ampe Rhythmic Elimination Game*

This is a game in which two lines of children (usually girls) face each other. They jump, clap twice, and on the second clap kick out one of their legs. Who kicks out which leg determines who is eliminated? They do this whilst singing a song based on the bell or wooden clave rhythm of contemporary highlife, a popular Ghanaian and West African dance-music. With a jump and two claps, the players sing three bell-like offbeat or claves (called “clips” in Ghana.)

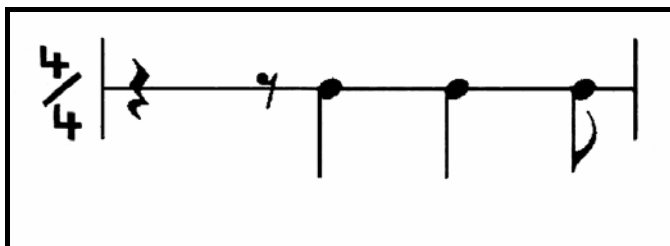


Figure 4: *The Akan ampe game*

In the children’s games already discussed we only dealt with a single strand in the complex web of sound that goes to make up African cross or polyrhythmic music. Now let us move on to more complex musical structures that contain many parallel or overlapping rhythms that are played simultaneously. We will deal with two particular polyrhythms – the *adowa* of the Asante and the *agbadza* of the Ewe. The latter is an embellished version of the ubiquitous African Signature Tune mentioned earlier. Both are played in what Western musicians would call a 12/8

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<sup>11</sup> Personal communication.



metre or time signature; i.e. the bar or basic unit is made up of twelve eighth notes or quavers.

To illustrate these two polyrhythms for the benefit of non-musicians, I will not use the standard form of musical notation, as in the above Figures, but will space out the beats or pulses of the various instruments in a graphical way known as the Time Unit Box System (TUBS).

In the following two cases, twelve time divisions are adequate to act as a common denominator for one cycle of the sub-rhythms depicted.<sup>12</sup> In fact these interval lines can be seen as a form of density referent. As in so much African music, it is the bell (or gong) that supplies the main reference-point or time-line of both the adowa and agbadza. The bell provides this time-line by being struck in a repeated cyclical pattern technically known as an "ostinato".

Instead of using the full range of drum tones in the following Figures I will, for the sake of simplicity, just use two: namely high and low. These tones are either produced on the same drum by the techniques of striking open low or muted high beats: or by employing twin drums (like the adowa atumpan master-drums), one of which is tuned high (the female) and the other low (the male).

### *The Adowa Drum-Dance of the Ashanti*

The adowa (means a small deer) is a graceful dance of the Asante court that evolved out of pre-existing Akan drum-dance styles such as mpre funeral song, akom possession music and the tonal phrases of the atumpan talking-drums. The adowa bell pattern appeared in Figure 2 in connection with the children's Akoko Funu game. Converted into TUBS graphical form it looks like the Figure below. To this I have added the four evenly spaced onbeats that fall within the time-lines of most African music. This is not usually beaten by any drummer but is rather an internally felt hidden beat. However it does give the cue to the downward movement of the dancers' feet.

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<sup>12</sup> Although I use twelve time-intervals I should add that A.M. Jones used as many as seventy-two of them to provide the necessary framework for the more intricate master-drum rhythms he was studying.

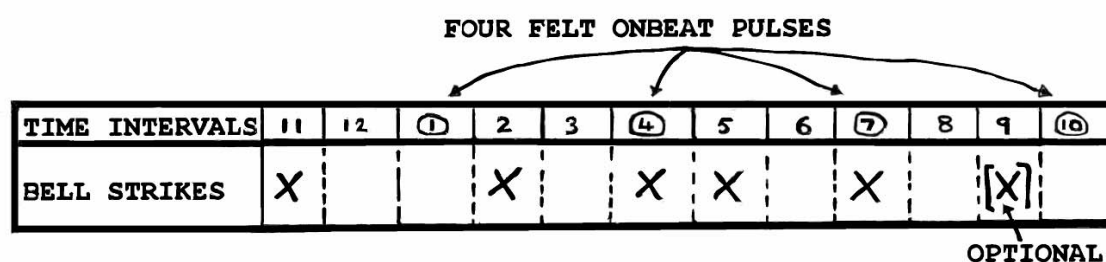


Figure 5: TUBS diagram of the adowa bell

Note that the bell pattern does not start on interval one but rather on eleven. This, as will be discussed later, is because it is the first adowa dance-step on one of the four felt onbeats that determines, for the Akan, the actual beginning of the cross-rhythmic cycle.

Now let us add to the bell time-line some of the other basic adowa sub-rhythms, to make a composite TUBS Figure of a various polyrhythmic phrases. These are the second bell, the hourglass or squeeze-drum (odonno), the hand-drum (apentemma) and the movement of the feet: as dance is an integral part of adowa. Indeed, the close association between dance and song is a feature of most African music, as is the downward foot movement that coincides with all or some of the four previously mentioned felt onbeats that occur within each bell time-line. Figure 6 illustrates the separate sub-rhythms of one particular adowa variation, called "to me ku me". This literally means, "buy me and kill me" or more poetically "I am at your mercy".

TIME INTERVALS	11	12	①	2	3	④	5	6	⑦	8	9	⑩
DAWURO BELL	X <sup>s</sup>			X		X	X		X			
SECOND BELL	X <sup>s</sup>		X		m		X		X		m	
ODONNO SQUEEZE DRUM			L			H			L <sup>s</sup>			v.H
FOOT MOVEMENTS			■ <sup>s</sup>						■			
APENTEMMA DRUM	L <sup>s</sup>	L		L	L		H	H		H	H	

Figure 6: TUBS figure of five sub-rhythms of the adowa "to me ku me" variation

*A small "s" besides a particular sub-rhythm denotes the start of that particular rhythmic phrase. Note that the sub-rhythms have staggered entries whose beginnings do not all coincide. This is typical of African polyrhythmic music.*

*Time-interval 1-12. The smallest number of intervals needed for the rhythms depicted: i.e. equivalent to the "density referent". The four felt onbeats are encircled.*

*The main bell or dawuro is struck (marked by an "x") five times per cycle.*

*The second bell is struck twice openly ("x") and once in a muted way ("m"), and this pattern of three notes is repeated twice over the twelve time-intervals.*

*The squeeze-drum Its high (H) and low (L) notes divides the twelve intervals into four. It begins on the last beat of the dawuro bell at time-interval seven.*

*The feet represented by a square move three times, but touch the ground just twice during two of the four felt onbeat pulses, dividing the twelve time-intervals into half.*

*The hand-drum or apentemma rhythm is produced by the left then the right hand beating the drumhead in an open and therefore low-toned ("L") way twice over. This is followed by the same procedure but with the hands shortly pressing and muting the drum skin, which creates a slightly higher toned note ("H"). It begins on the first beat of the dawuro bell on time-interval eleven.*

The above Figure clearly shows the staggered rather than simultaneous beginnings of the various sub-rhythms that comprise the polyrhythm. The polyrhythm is also clearly polymetric, as the second bell is in waltz-like triple time (it divides the twelve time-intervals into two groups of three) whilst the feet and squeeze-drums are in duple and quadruple time (i.e. they divide the twelve time-intervals into twos and fours respectively). The main bell however is in hemiola<sup>13</sup> compound-time as it contains both duple and triple elements.

Now let us move on to consider another 12/8 drum-dance from the Volta Region of Ghana called the agbadza.

### ***The Agbadza Social Dance of the Ewe***

The agbadza (pronounced agbaja) is a recreational dance of the Ewe people of Southeastern Ghana. It developed out of a much faster war dance known as Atrikpui. The agbadza/Atrikpui bell rhythm is an embellished variant on the African Signature

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<sup>13</sup> A hemiola's duple and triple time are either played alternatively within a musical bar phrase or, as in the adowa and most polyrhythmic music, played simultaneously.

Tune, which A.M. Jones discovered, was played in so many parts of Africa. These are compared below. As with the adowa, twelve time-intervals are needed as density referent.

TIME INTERVALS	1	2	3	4	5	6	7	8	9	10	11	12
AFRICAN SIGNATURE TUNE	X		X		X			X		X		
BELL PATTERN	X		X		X	X		X		X		X

Figure 7: TUBS figure of the agbadza/atrikpui bell rhythm compared with that of the African Signature Tune

In the next Figure and in addition to the bell, some of the other sub-rhythms of polyrhythmic agbadza drum-dance music are illustrated in TUBS graphical form. These include the kagan (small-sized) and kidi (medium-sized) support drums that are played with sticks, while participants clap hands and beat the floor with their feet as they dance.

TIME INTERVALS	①	2	3	④	5	6	⑦	8	9	⑩	11	12
GANKOGUI BELL	X <sup>S</sup>		X		X	X		X		X		X
KAGAN DRUM	H	L	L	H	L <sup>S</sup>	L	H	L	L	H	L	L
FOOT MOVEMENTS	■ <sup>S</sup>			■			■			■		
HAND-CLAPS	C						C <sup>S</sup>			C		
KIDI DRUM		L	L	L				L <sup>S</sup>	L	L		

Figure 8: TUBS figure of five sub-rhythms of the Ewe agbadza

Time-intervals 1-12. The smallest number of intervals needed to graphically depict the rhythms. The four felt onbeats are encircled. The bell or gankogui is struck ("x") seven times. On a double-headed high/low bell the first note is accentuated by striking the lower pitched of the bells.

The kagan stick drum. This high pitched drum is played with two sticks that beat a repeated basic three note phrase; the right hand strikes the drum openly twice and then the left stick is played with the right stick held down on the drum-head, which mutes the left strike and raises its tone somewhat. The result is a continuous sequence of two low notes ("L") followed by a high one ("H"), which

*almost exactly follow the twelve metronomic time-intervals. However in actual practice the second low note of the basic three-note phrase being bounced as a double one breaks up this rather mechanical procedure. The kagan rhythm takes its cue from the third stroke of the bell pattern on interval five.*

*The hand claps. The audience claps three times coordinated with the feet, the third corresponding to the beginning of the bell pattern.*

*The feet. Denoted by a square. The feet move earthwards on each of the four felt, rather than on just two as in the case of the adowa.*

*The Kidi is a medium-pitched drum whose absolutely simplest rhythm is made by the right, left, then right sticks striking the perimeter of the drum skin producing a succession of three open lowish notes ("L") played twice over during the complete polyrhythmic phrase. For sake of clarity I have left gaps between these two groups of three notes, although in actual practice they may be filled with quiet muted notes. The kidi rhythm takes its opening cue from the fifth stroke of the bell on time-interval eight.*

In the above Figure, the staggered beginnings of the agbadza polyrhythmic phrase are obvious. Like the adowa, the agbadza is also polymetric. For instance the kidi is played rather like a triple time waltz whilst the downbeat of the dancing feet are in quadruple time, as they divide the twelve time-intervals into four groups. Like the adowa, the agbadza bell pattern contains aspects of both duple and triple time signatures.

When teaching the agbadza bell rhythm and the African Signature Tune to students in Europe and North America I usually compare these patterns to ones they are already familiar with: namely the twelve semitone diatonic melodic scale: and in particular the seven-note (heptatonic) major scale and a common five-note (pentatonic) melodic scale. In the following comparisons I use the standard tonic sol-fa notation for the melodic lines.

TIME/MELODIC INTERVALS	1	2	3	4	5	6	7	8	9	10	11	12	1	2
BELL PATTERN	X		X		X	X		X		X		X	X	etc.
MAJOR SCALE	do		re		mi	fa		sol		La		ti	do	

*Figure 9: Comparison of the agbadza bell rhythm with the diatonic seven-note major scale – using tonic sol-fa notation*

TIME/MELODIC INTERVALS	1	2	3	4	5	6	7	8	9	12	11	12	1	2
BELL PATTERN	X		X		X			X		X			X	etc.
PENTATONIC SCALE	do		re		mi			sol		la			do	

*Figure 10: Comparison of the African Signature Tune with a diatonic five note pentatonic scale – using tonic sol-fa notation*

Before discussing the above rhythmic-melodic similarities something must first be said as to why the diatonic scale has twelve intervals or semitones to the octave. The pitch of any particular musical note is based on its frequency or vibrations/cycles per second, higher notes having the faster frequency. The highest note we can hear has a frequency of about 20,000 cycles per second and the lowest 16 per second, below which a musical note breaks up into individually heard vibrations and thus turns into a staccato-like rhythm. If the frequency of any particular note is doubled it becomes the next higher octave, conversely if it is halved the octave drops down one.

As the reader can appreciate, with a hearing range of 20,000 vibrations per second, which is ten octaves, the frequency range in any one octave can be divided into an enormous number of intervals. However in actual Western practice it is divided up into the twelve semitones of the diatonic scale. However, there are other finer tuned systems such as those of the Orient and some modern classical musicians, in which there are seventeen, twenty-two or more “micro-tone” intervals to the octave. The limit seems to be related to the ability of the human ear to distinguish between very close pitches, which for the average person are about one eighth of a semitone.

As just mentioned, the Western diatonic scale contains just twelve intervals or semitones. Nevertheless, what interests us here is that the spacing of the seven-note major scale and five-note pentatonic scale on these twelve melodic intervals is structurally similar to the rhythmic spacing of the agbadza and

the African Signature Tune. Furthermore, all complete their melodic or rhythmic octave on the thirteenth interval.<sup>14</sup>

Whatever the structure, this particular rhythm or melodic spacing of five or seven pulses on twelve intervals does seem to satisfy the creative human brain's need for a ordered structure that can at the same time allow infinite permutations.<sup>15</sup> The combinational power of seven on twelve will be returned to again in Thematic Chapter Six on asymmetry in connection with the instability of the seventh "leading" note in Western harmonic theory.

However there may be more to this than just a parallelism between these rhythmic and melodic structures, there may even be a tenuous historical link in the case of the seven note scale and rhythm. Pythagoras was one of the ancient Greek mathematicians and philosophers who helped "discover" the diatonic scale and the modal spacing on it, one of which we now call the major scale. Again it was Pythagoras in the sixth century BC who is reputed to have been the first to realise that eight notes made a completed octave, which subsequently enabled the various separate Greek tetra-chord scales to be linked in a continuous chain of notes. Later Greek writers also claim that it was Pythagoras who carried out the first monochord experiments<sup>16</sup> that provided the mathematical foundations of important pitch intervals found within musical scales; particularly the octave (string ratios of 2:1), the fifth (3:2) and fourth (4:3).

Pythagoras, however, spent 22 years in Egypt studying in temples from where he obtained many of his mathematical and musical<sup>17</sup> ideas and where both pentatonic and heptatonic scales

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<sup>14</sup> Jeff Pressing (1983) goes even further in his comparisons as he sees a resemblance (a "cognitive isomorph") between 12/8 African rhythms, (other than the agbadza) which resemble non major diatonic scales (i.e. the dorian, aeolian modes, etc.).

<sup>15</sup> The musical theorist Joseph Schillinger points out that the interest in five and seven may reflect an ancient fascination with prime numbers (3, 5, 7, 11, 13 etc.) that cannot be divided by any other whole number other than one and themselves.

<sup>16</sup> This is a one stringed instrument used in musical experimentation.

<sup>17</sup> He was trained in music by Egyptian priests according to Kendrick's *History of Ancient Egypt*, Volume 1, p. 234.

were in use. These were based on a widespread ancient mathematico-musical system of ascending intervals of a fifth. When he returned to Greece Pythagoras joined the snake-cult associated with the Delphic Oracle; probably itself imported from North Africa and the Aegean. Indeed, the very name Pythagoras comes from the sacred Python buried in a cave at Delphi – as does the word Pythia, the priestesses who officiated at the Oracle. Pythagoras' name also became linked with the fact, probably a secret of the Egyptian priesthood, that there is a slight discrepancy in the scale of ascending fifths. As will be discussed in Thematic Chapter Six Western musicians spent hundreds of years trying to solve this anomaly of the so-called "Pythagorean Comma".

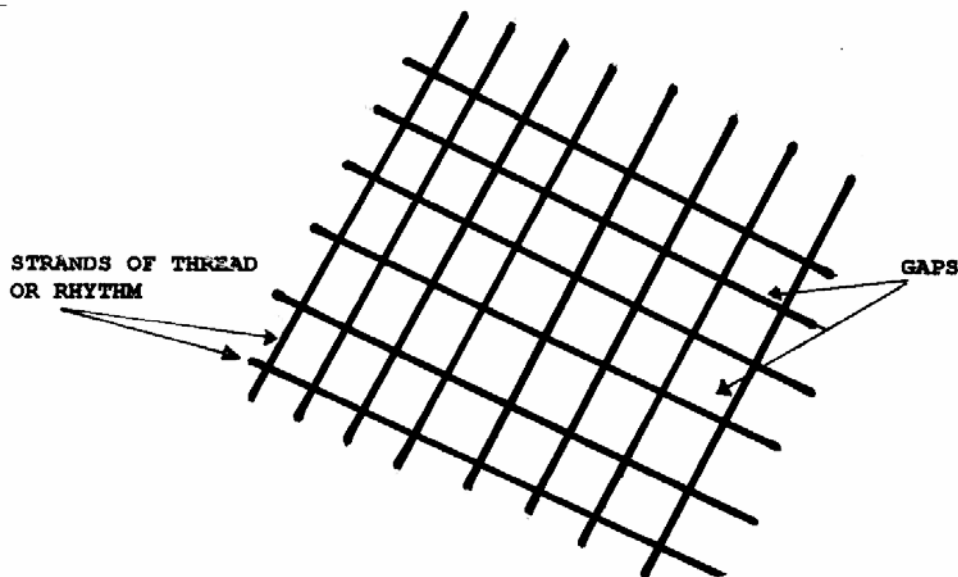
If, in addition to acquiring his geometrical theorems from the Egyptian priesthood, Pythagoras also acquired some of his musical innovations from there, then the intriguing idea emerges that Africa has twice provided the same seven pulse on twelve interval musical structure: once in melodic and once in rhythmic form.



### Theme Three: Hidden Space – Syncopation and Swing

In addition to its relativistic array of staggered rhythms each with its own starting and endpoint, another aspect of African music is its utilisation of rhythmic silence. Two analogies might help here.

Weaving provides a very simple one if the individual sub-rhythmic strands of music are compared to threads of cloth. Cross-rhythms are like the cross-webbed threads of the fabric that, if one looks closely enough, are full of gaps between the webbing. The following Figure illustrates this analogy.



*Figure 11: Enmeshed space within criss-crossing threads of cloth or strands of rhythm*

The second example is the three dimensional one of the architect who uses stone, metal, glass and wood to construct a building, whose main purpose is, of course, to create living and working room. Similarly the African musician uses polyrhythmic structures to create sonic space. Continuing in this architectural vein, African sub-rhythms can also be equated to scaffolding; for both are intersecting strands of sound or steel that envelope acoustic or physical space.

Continuing this analogy, European art musicians can be compared to builders who construct massively intricate edifices

that leave little living space inside; so they can only be appreciated in awe from the outside. The rhythmic architects of the African music, on the other hand, arrange the building blocks so as to provide plenty of acoustic room for everyone to move around and about in.

We shall return to the hidden spaciousness enmeshed between overlapping polyrhythm in more detail later, but first let us look at the spacing of individual sub-rhythms.

### *Rhythmic Syncopation*

This topic has been touched upon already in connection with Hornbostel's observations that African drumming has twin components; namely the heard acoustic downstroke and the silent motor upstroke. In fact he claimed that one of the major differences between the Western and African approaches to rhythm was that, whereas Europeans emphasise the heard aspect, Africans put an equal stress on the silent gaps, when the arm is moving upwards in preparation for the following downbeat.

The upbeat motor component that Hornbostel highlights is, in fact, a part of a larger African awareness. For the hands and fingers of African musicians create all sorts of other spatial patterns and hand jives<sup>18</sup>, besides those of up-and-down stroke and the previously mentioned oppositional techniques used to play drums, lutes and hand pianos.

If extended to the whole body, this African attention to the kinetic side of music explains the importance of dancing. Indeed the dancers in African music are literally part of the musical ensemble as they supply and improvise on some of its rhythms, sometimes enhanced by bells and jingles attached to the ankles and other parts of the body. Even the body itself becomes the

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<sup>18</sup> The hand jive is actually an African American hand-dance that became fashionable in the early rock 'n' roll era. Complex hand gestures are also found in African dance movements, like in the adowa. For examples of hand dances used to play East African drums and Central African guitar see Friedson (1996) and Rycroft (1961/2).

percussive instrument as it can be slapped, stamped and clapped in what African Americans call "body pats".<sup>19</sup>

Whether sounded or not, African and African derived dance is made up of various polyrhythmic motions of feet, hips, shoulders and hands, of which some are based on the offbeat movements inbetween the sounded beats of the percussion instruments. Put another way, they are syncopated against the overt rhythm. Syncopation is a Western musical term for the emphasising of un-accented offbeats that are not usually stressed in European music: therefore it implies something against the norm. Taking into account that this technique is very much the norm in Africa, I will, however, continue to use the word syncopation, as it is a useful descriptive term.

Many musicologists have noticed the syncopated African sensibility. One is John Blacking who, talking about the Venda people of Southern Africa in his book *How Musical is Man* (1974), states that the gap between two drum-beats "is not a rest (as) each drum beat is part of a total body movement." The Ghanaian musicologist Kofi Agawu (1986) writes about the "silent", "unarticulated" or "unsounded" beat of West African drumming, which he also sees commonly found in African American jazz and blues.<sup>20</sup>

The African American writer Amiri Baraka (Leroi Jones) in his book *The Blues People* (1963) also comments that in African and black New World music "no note is attacked straight", and that rhythmic timing and accentuation is not stated but "implied or suggested." In his book *African Art in Motion* (1974) Robert Farris Thompson calls this African/Black Diaspora musical offbeating "Afrikanisches Aufheben", adopting the word "Aufheben" from the German philosopher Hegel who used it to mean affirmation through cancellation or suspension.

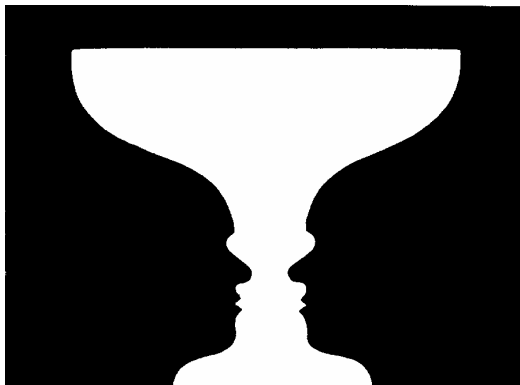
It may be helpful to illustrate this even-handed African approach to both the heard and silent sides of a rhythmic

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<sup>19</sup> African American "body pats" or "patting juba" (and indeed tap-dancing) evolved when slaves in the USA were forbidden to use their drums. So they turned their bodies in percussive instruments.

<sup>20</sup> Other musicologists who have noted that African music often has no main beat or it is an implied one include Jones (1959), Arom (1991) and Chernoff (1979).

pattern by using the famous gestalt psychological figure-ground picture of the face and vase.



*Figure 12: Alternating figure and ground – the faces and vase*

*First you might see the above figure as a white vase surrounded by a dark background. Then it will flip to a figure of two dark faces with white ground in between. The contour nevertheless remains the same.*

The reader should imaginatively convert the above Figure into a rhythmic pattern with the vase being the played sounds (i.e. gestalt figure) and the two faces the silent intervals (i.e. gestalt ground). Hornbostel's point was that the African musician is an expert at "seeing" the rhythmic boundary from both points of view, either as an arrangement of sounds (i.e. vase) or arrangement of silences (i.e. faces). The European, however, focuses only on the sounded aspect of the total picture (i.e. vase) and ignores the rest as irrelevant background.

To illustrate this African musical skill in handling silent gaps as well as sounded notes we can take the case of the way the maracas or shaker is played in the agbadza drum-dance.

In a simple version the maracas (called axatse in Ewe) is held in the right hand and beaten on the knee in time with the bell. However, instead of leaving the upstroke or offbeat silent, as with the bell, the axatse is rather accentuated by striking it against the left hand, which is held above the instrument. This creates a slightly different sound from the down-stroke, which has a rhythm the exact opposite of the bell pattern: as can be seen in the Figure below.

TIME INTERVALS	1	2	3	4	5	6	7	8	9	10	11	12
UPBEAT		■		■			■		■		■	
DOWNBEAT (also bell)	■		■		■	■		■		■		■

*Figure 13: The simplest maracas rhythm of the agbadza*

The complimentary aspects of the two maracas rhythms can clearly be seen in the above Figure, each punctuating the other's silent spaces. Furthermore and as a quick glance at the Figure will reveal, the pattern of upbeat gaps in the axatse-cum-bell pattern of the agbadza is in fact one version of the ubiquitous African Signature Tune.

Yet another example already referred to (see Figure 6) is the odonno squeeze-drum and apentemma drumming rhythms of the adowa drum-dance: which again compliment and fit exactly into each other's intervals. To further illustrate this point the reader can experiment with any familiar rhythm they already know as described below.

The first step is to play the well-known rhythm on a tabletop. Then place a soft object (like a cushion) on the table and hold a hard one (like a book) above the striking hand. Then play the rhythm again. The cushion will now muffle the usually heard down-stroke rhythm, whilst one's knuckles hitting the book will accentuate the normally silent upstroke. You will end up hearing the familiar rhythm played in an unfamiliar negative, inside-out or upside-down way. In short its hidden pattern of silences.

As a final example of rhythmic spacing I will present a non-musical, though highly rhythmic example, which is taken from the African kitchen! In West Africa there is a favourite dish known as fufu, often prepared by two people. One pounds the cooked starches with a large wooden pestle whilst the other turns the food in a wooden container or mortar. To non-Africans, the man or woman who turns the dough has the amazing ability remove their fingers from the descending pestle just in time. A European attempting this perilous operation

would probably first put their attention on the down-stroke of the pestle – and then place their hands into the mortar after the heavy thump of the pestle. This double mental procedure of first noting the down-stroke and then secondly, using the hands to turn the starch in the following gap, can easily lead to confusion and crushed fingers. The African adept, however, simply puts his or her hands directly into the silence between the strokes in a single mental operation that is much safer on the fingers!

Besides the awareness of the silent patterns in a sub-rhythm and their potential use by other complimentary matching rhythms (played, danced or even imagined), another facet of spacing in African music is rhythmic flexibility, leeway or swing.

### *The Rhythmic Flexibility of “Swing”*

In the block Figures of the simple support rhythms of the agbadza and adowa, dealt with earlier, twelve metronomic time-intervals were used, although as already mentioned seventy-two of these divisions were employed by A.M. Jones to handle the more intricate drum patterns. Furthermore, he admits that even these were not enough for some of the improvised solos he was recording of the late Ghanaian master-drummer, Desmond Tay.

In other words to depict creative and spontaneous playing using Jones’ graphical or digital approach one would have to divide up a single rhythmic pattern, such as those of Figures 6 and 8, into an enormous number of “density referent” time divisions. This puzzle of ever tinier time-intervals is solved, however, when one realises that all these clockwork divisions, whether twelve, twenty-four, seventy-two, etc., are imaginary constructs. No drummer actually beats them out. Moreover, they can be made so fine that they literally turn in a seamless rhythmic continuum or space that surrounds the individual rhythmic pulses. Within the broader rhythmic parameters of a sub-rhythm it is this internal offbeat space, rather than a divisive time-grid, that allows creative drummers a limitless area to manoeuvre and fractionally anticipate or delay a percussive strike. In short, the density-referent idea, if taken to its logical divisive conclusion, paradoxically ends up with a continuous

rhythmic field<sup>21</sup> which can be stretched and squeezed, and within which there is infinite room to “swing”. An equivalent expression used by Western musicians is “rubato”, which means when one note robs some time from the succeeding one: a time so tiny that, like swing, it cannot be notated divisively and is left to the feel of the virtuoso performer.

In spite of what has been said, the bracketing of rhythmic sequences into tiny time-intervals or “density referents” is useful for analytical illustration. In subsequent TUBS Figures, therefore, I shall continue to use these interval lines, but they will be dotted to show their imaginary quality: as in the case of the agbadza kidi drum rhythm depicted below.

TIME INTERVALS	1	2	3	4	5	6	7	8	9	10	11	12
PROMINENT KIDI STRIKES		L	L	L				L	L	L		

*Figure 14: The simple kidi drum pattern of the agbadza dance*

In the above Figure the kidi is depicted as being beaten exactly in the middle of the imaginary time-intervals. However, in reality it is never continuously stuck in this rather dull and rigid way, as the musician may sometimes move or swing the down-stroke pulses (“L”) about in the surrounding silent gap between the imaginary lines, by anticipating or delaying it fractionally. This possibility of not necessarily having to strike the percussive pulse dead centre creates a tension within the offbeat rhythmic field, which is illustrated in the following magnified portion of the kidi pattern.

<sup>21</sup> I am using the word “field” here as it is used in physics: as a geometrical model that represents the forces or tensions that can exist between bodies not in contact. In this musical case the tensions are rhythmic stresses and strains, the non contacting bodies are the various percussive pulses and the geometry is the rhythmic space or “swing” that separates these various pulses.

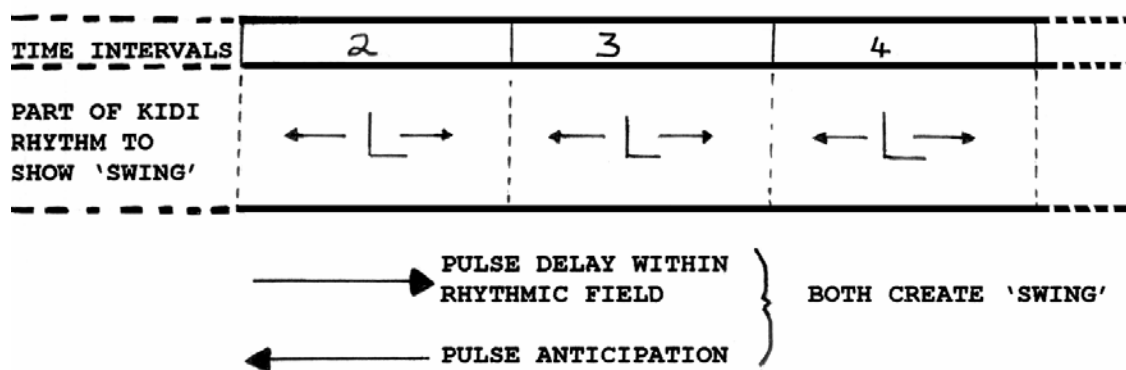


Figure 15: Expanded portion of the kidi rhythm to show the potential "swing" in the offbeat rhythmic field

The internal leeway or latitude depicted in the above Figure not only allows room for the pulses ("L") to "swing" in within the individual sub-rhythm, but also has an overall combinational effect on other sub-rhythms. If, for instance, the kidi down-stroke pulses are anticipated slightly the result, in relation to the other rhythms, is perceived as one of time compression and, if slightly delayed, as one of time dilation. The skilled drummer can of course use any combination of these techniques to create a number of what might be called "auditory illusions" of stretched and squeezed time within the cross-rhythmic field. This cross-rhythmic spacing effect will be returned to later.

The expanded Figure 15 also helps explain why in the pounding of fufu, the person turning the dough seems to have so much time (on hand); always just removing the fingers at the very last moment. For if the low open pulse "L" of the kidi drum is taken as the down-stroke of the pestle, then it can be clearly seen that there is a comparatively enormous amount of room on either side of it to swing around in and manipulate the dough.

The American musicologist Charles Keil (1970 and 1987) has observed that African American jazz musicians such as Max Roach, Art Blakey and Elvin Jones are also aware of this rhythmic space, as they often place a delayed accent on notes that produces an out-of-synch rhythmic tension. This inventiveness and use of subtle tempo "perturbations" is part of what Keil calls the "participatory discrepancies" that are so noticeable in African American music.



Indeed it is these two African rhythmic features of swing<sup>22</sup> and syncopation that helped enable slaves from Africa overcome the problem of having to play the music of their white masters in the New World, particularly in Protestant North America where indigenous African music and drumming was completely banned. It was the acute awareness of the swinging offbeat musical spaces that Europeans largely ignored that enabled African slaves to maintain their polyrhythmic patterns: even when boxed in musically by the mono-rhythmic duple and quadruple time of white Americans. For instance the ability to stretch and generally swing musical time permitted the slaves to squeeze and transmute their 12/8 African Signature Tune pattern<sup>23</sup> into one of the 4/4-clave rhythm found Afro-Caribbean and Afro-Latin music.<sup>24</sup>

The African feel also survived slavery when African Americans syncopated, offbeat, ragged, or jazzed their music. For instance African Americans emphasising the second and third beat, largely ignored by the whites, transmuted Western brass band marching music (with its emphasis on the first and third beat of the bar) into jazz. Likewise Jamaican offbeating involved into the skanking guitarists and back-beat drummers of ska and reggae. I would also suggest that this idea of black musical offbeating against Western tempo could even be extended to the realm of language, for the African American practice of giving English words such as “bad” and “mean” an opposite positive meaning can be treated as a form of black linguistic syncopation.<sup>25</sup> Amiri Baraka believes this inverted English was a code used by black slaves to hide things from their masters, for when they were forced to use their masters

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<sup>22</sup> The name swing was actually given to the big-band jazz music of Fletcher Henderson, Duke Ellington (and their white imitators) which featured highly improvised solos.

<sup>23</sup> See Figure 1 (Ewe children’s song): a pattern comprising three equidistant pulses, followed by a gap, then two pulses and another closing gap.

<sup>24</sup> This somewhat resembles the gahu bell pattern discussed earlier, but the last stroke is played on the onbeat time-interval thirteen instead of the offbeat fifteen. This black diasporic rhythm is found, for instance, as one of the Afro-Cuban clave rhythms, in the Brazilian samba, the Trinidadian calypso and a in a rhythm popularised by the American rhythm ‘n’ blues musician Bo Diddley.

<sup>25</sup> See for instance Thomas Kochman (1972).

language they turned the meaning inside out and used offbeat expressions which they understood but their white overseers did not.

In short, by turning white music (and language) inside out and focusing on the largely ignored offbeats the African American descendants of African slaves found space to “swing” within European musical bars and parameters. By so doing they colonised it from within, made it their own and gave the world its first truly global popular music.

### *Three Examples of the Spacey African Rhythms*

We will conclude this theme on the African sensitivity to hidden rhythmic space with three specific examples. Firstly, the bell time-line of the Akan adowa dance. Secondly, the clap/bell time-lines of the ye-ye children’s game and gahu. Thirdly we will discuss the example of modern African American break-dancing that has some roots in Africa.

#### *Rhythmic Muting: The Adowa Dance*

For the Akan adowa, as with many other traditional African drum-dances, it is the onbeat dance steps, which provide the fundamental cue within the polyrhythmic composition. During the adowa dance the feet touch the ground twice for each bell phrase, and in such a way that the bell pattern starts just before (i.e. syncopated against) the first foot movement. This is why in the earlier TUBS Figure of this Akan dance the beginning of the bell pattern is placed on interval eleven, slightly ahead of interval one and the first of the double foot movements. In fact, and as a glance at the following Figure will show, no bell note falls on interval one. However, according to the Ghanaian musicologist William Anku,<sup>26</sup> the metal bell, resonating from being stuck at interval eleven, is sometimes muted (“m”) on interval one: which recognises the start of the polyrhythm through under-statement: i.e. what Farris Thompson called “Aufheben”.

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<sup>26</sup> Personal communication.

TIME INTERVALS/ 4 FELT ONBEATS	11	12	①	2	3	④	5	6	⑦	8	9	⑩
DAWURO BELL	X		m	X		X	X		X			



  
MUTED

Figure 16: The muting of the adowa bell

This lack of accent on what Europeans would consider the first beat of the music is something that constantly crops up in African music and we will come across this phenomenon again later.

Another aspect of this African awareness of musical space is in the honing down of specific rhythms in various ways to produce edited versions of them, much in the same way as a carver can whittle down a piece of wood into different shapes. I will illustrate this point with, the clap patterns of the Ewe children's game ye-ye and the bell patterns of the gahu drum-dance and contemporary highlife music.

### *Rhythmic Editing: The Ye-Ye Children's Game, Gahu and Highlife*

As mentioned earlier in the chapter, the Ewe ye-ye rhythm is based on the bell pattern of a neo-traditional dance known as gahu or agahu. However, it is not quite this straight forward, as the children, whilst shuffling their feet, actually clap out two rhythms. One simply follows the four onbeat movements of the feet, whilst the clap based on the gahu bell pattern is only partially clapped out. In the following TUBS Figure I have included the full gahu bell pattern for comparison.

TIME INTERVALS/ 4 FELT ONBEATS	①	2	3	4	⑤	6	7	8	⑨	10	11	12	⑬	14	15	16
GAHU BELL	X			X			X				X				X	
YE-YE CLAP 1	C			C												
YE-YE CLAP 2/ FOOT MOVEMENTS	■				■				■				■			

Figure 17: The rhythms of the gahu bell and two ye-ye claps

Note in the above that as in the agbadza and adowa the downward foot movements of the gahu dance are in time with the four evenly spaced felt onbeats of the polyrhythmic phrase. However, the ye-ye game and gahu are in 4/4 times which means each polyrhythmic phrase is made up of four quarter or crotchet notes. Therefore a minimum of 16 time-intervals has to be employed when using the TUBS diagram, instead of the 12 for the adowa and agbadza. Consequently the four felt-beats of gahu and ye-ye fall every fifth instead of fourth time-interval.<sup>27</sup>

The gahu bell rhythm, apart from being used in the Ewe children's game is also structurally related, in a whittled down way, to the triple offbeat highlife bell/clave pattern mentioned at the beginning of the chapter as the rhythm supporting the Akan children's elimination game ampe.

In this case the segment of the gahu rhythm not clapped out in the ye-ye is used in the highlife pattern, whilst that clapped out in the Ewe children's game is cut out. In the following Figure the highlife bell/clave pattern is compared to that of the gahu bell. In both, however, the foot movements are the same and follow the four felt onbeats.

TIME INTERVALS/ 4 FELT ONBEATS	①	2	3	4	⑤	6	7	8	⑨	10	11	12	⑬	14	15	16
GAHU BELL	X			X			X			X					X	
HIGHLIFE TRIPLE OFF-BEAT							X			X					X	
HIGHLIFE/GAHU FOOT MOVEMENTS	■			■				■						■		

Figure 18: The triple offbeat highlife bell clave pattern compared to the gahu bell

Highlife audiences sometimes clap on intervals one and four, which exactly coincides with the first two strikes of the gahu bell. This procedure creates a call-and-response between the audience and the triple offbeat highlife bell.

<sup>27</sup> Incidentally, in gahu's goombay progenitor the last beat of the bell is in interval fifteen instead of thirteen.

### ***Rhythmic Breaks and Freezes in African and Black Diaspora Dance***

Not only does African music contain gaps and breaks but their dancing also involves freezes. Anyone who has watched an African dancer coming into a circle of village people to perform a traditional dance (like the agbadza for instance) will have noticed the use of rhythmic under-statement. After a few moments of vigorous movement, the dancer stops in mid-motion and walks off-stage. The way in which he or she stops is as highly appreciated as the dancing itself.

The use of rhythmic breaks and hold-ups are not only found in Africa but also in the music and dances of the New World descendants of the Black Diaspora. The American musicologist R.F. Thompson (1986) has observed the use of breaks in Haitian music, the instrumental pauses or "rumbaabierta" of Cuba and the move-and-freeze features of the Afro-Cuban mambo dance.

Some of the more recent black dances to come from America, like break-dancing and hip-hop, also involve rapid acrobatic movements punctuated by sudden freezes. As Tom Droughan, one of the creators of break-dance comments, "Imagine man, you're spinning as fast as you can and then you stop in a beautiful position in the twinkling of an eye." According to pop journalist Stuart Cosgrove, "the trademark of Hurby Azor (one of the top United States hip-hop and rap producers) could never be called a wall of sound; there are too many gaps, spaces and hip-hop hold-ups. This time pop has been reinvented in a dislocated form as grill music."

## Theme Four: Holism – The Collective Beat

Although polarities create rhythmic stresses and strains we have seen that some of the polyrhythmic units (i.e. sub-rhythms) dovetail into each other's offbeat intervals or set up overlapping call-and-response dialogues.

This knitting together of rhythms is also enhanced in two other ways. Firstly and as will be discussed here, the separate rhythmic strands are composed of sound waves that interfere with one another to create a resultant rhythm that no-one actually plays, but which helps sustain musical unity. Secondly and as will be discussed under Theme Five on circularity, African tempo moves in repeated rounds which blend the staggered beginnings and endings of the different rhythms together into a seamless whole.

### *The Interference of Cross-Rhythms*

Interference can occur whenever there are two or more interacting and vibrating (i.e. oscillating) systems of slightly different frequencies (i.e. vibrations per second). What happens is that the overlapping vibrational waves either reinforce each other or cancel each other out, so creating a new resultant vibration called an "interference pattern" or "standing wave".

This phenomenon can be seen when multiple moving ripples criss-cross and interfere with each other on the surface of water and produce interesting and seemingly stationary standing wave patterns.

Interference was even used during World War II to distinguish between Allied and German twin-engine aircraft. Whereas the British manufacturers synchronised the two propellers so that they spun (i.e. vibrated) in phase, the Germans did not. So an extra pulsation or "beating" (i.e. interference pattern) could be heard over the drone of the German engines even at a distance; the length of the pulsation depending on how far out of synchronisation the two engines were. In a more peaceful context this "beating" technique is precisely the one used by musicians and piano tuners to tune two strings, the

“beating” slowing down and finally disappearing when the two strings are in perfect tune and their vibrations match.

The following is an illustration of the interference of two vibrating waveform. The crest of the wave is the point of maximum vibration and the bottom or trough is the point of minimum vibration.

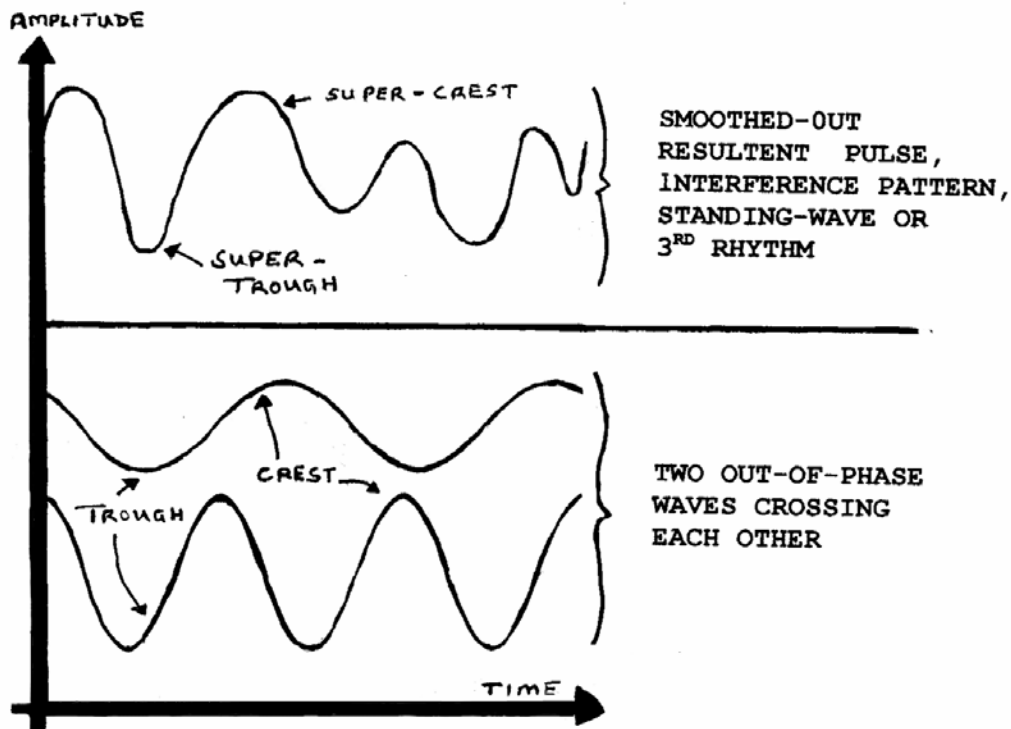


Figure 19: Two waveforms and their resultant interference pattern

As can be seen from Part 3 of Figure 19, at certain points the waves of Part 1 and 2 are so superimposed that their crests reinforce each other as super-crests and their troughs as super-troughs. Conversely, when a crest and trough overlap they cancel each other out, resulting in a point on the interference wave halfway between a super-crest and super-trough. So positive and negative interference create new patterns that when smoothed out give a third wave pattern: equivalent to a standing wave in water, the pulse of the German war plane and the “beatings” of two slightly mistuned musical strings.

Even though African rhythms are patterned sequences of sound, when two or more different rhythms are played together their combined pulses or tones interfere with one another and

produce a third resultant wave-like pattern: a rhythmical pulse that no one actually plays and yet seems to have a rhythmic life of its own. The new resultant rhythm is what might be called a polyvalent acoustic gestalt<sup>28</sup> whose sum is greater than its collective sounded and unsounded parts. Western musicologists who have studied African music have given names to this phenomenon. Austrian Gerhard Kubik calls the phenomenon an "inherent rhythm", whilst the American Ruth Stone<sup>29</sup> calls it a "unitary whole".

In Ghana I have heard musicians sometimes refer to this as the "inside rhythm". This, in addition to the subjective metronomic pulse and kinetic/dance aspect of African music discussed earlier, is another feature that helps hold the disparate parts of polyrhythmic music together. It is the cool centre of the rhythmic hurricane. Moreover, this resultant rhythm can sometimes be made out, even by the unfamiliar with African polyrhythmic music, deep in the quiet of the night and if one is far enough away from the ensemble so that the individual drums blend. This pulsating inside rhythm or inherent rhythm is the totality of all the drums and other percussion instruments combined together. Furthermore, and as in the case of individual rhythms, the collective inside rhythm also has a sounded and relatively silent aspect, as it swells and diminishes in intensity.

Sometimes African musicians employ devices that exaggerate the inference effect in order to create vibrations that are aesthetically pleasing to them, or believe these put them and their instruments into special touch with the spiritual world. One is the mbira hand-piano of Shona diviners, which is given an extra vibrational buzzing quality by small pieces of metal being loosely attached to it that are believed to create the actual voice of the ancestors or *Soul of the Mbira*<sup>30</sup>. Another African

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<sup>28</sup> Here we are not treating a gestalt as a product of a single figure/ground or sound/silence relationship, as depicted in the earlier faces and vase diagram, but rather a polyvalent product of multiple figure/grounds. Or put another way, as a gestalt of all the combined sounds of the various cross-rhythms on the one hand and all the relative silences on the other.

<sup>29</sup> For G. Kubik see 1962 and for R. Stone 1982.

<sup>30</sup> The title of Paul Berliner's 1978 book on Southern African Shona music.



instrument that is sometimes made to produce similar indistinct buzzing tone that gives voice to the spirits is wooden xylophones. For instance, the resonance gourds of the Northern Ghanaian pentatonic xylophone (gyil) are performed with holes and covered with membranes of spider-egg cocoons, which vibrate when the instrument is played. Other examples are drums that have loose pieces of metal attached to their outside or double-headed drums that have small rattling stones inside. This African pleasure for unclear buzzing musical sounds even found its way to the Americas as, for instance, the so-called "dirty tones" of African American jazz musicians.

## Theme Five: Circularity – Rhythmic Reincarnation

Up until now various African music styles have been presented, whether in standard notation or in the graphical TUBS Figures, as being composed of linear rhythmic phrases or time-lines, albeit in repeated or ostinato form. Another way this has been put is that African polyrhythm move in cycles of time with their ends and beginnings becoming juxtaposed. We will now explore this circularity.

The simplest cycle revolves around one key instrument, usually the bell, which together with the other support rhythms and the movement of the feet sets a continually repeated pattern that acts as the basic unit of the musical piece.

This fundamental polyrhythmic cycle we can call the “Beat” (with a capital B) of the musical style in question, not to be confused with beat with a small “b”, which means an individual percussive, strike or pulse.

As the African Beat revolves in time, it is quite reasonable to represent it figuratively by looping the previous linear notations into circles, and we will do exactly this below for the previously linear TUBS Figures of the adowa, agbadza and gahu. First I should mention some of the limitations of this circular picture of the Beat.

First of all the Beats as depicted below are based on only one cycle of the bell pattern, whereas in practice the music winds itself through time. To attempt to try to depict this would mean using a three-dimensional spiral Figure. Figures 20-22 are therefore only sections of a musical spiral.

Secondly, only those rhythms that span one bell phrase are used, whereas some of the master-drum patterns and more complex dance-steps extend over several cycles of the Beat. The Beat is, therefore, just one cycle within other larger cycles; but the greater cycles will not be presented here.<sup>31</sup>

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<sup>31</sup> Neil McLachlan (2000) discusses “heliocentric” cycles that involve the rhythmic patterns that emerge out of multiple Beats. When depicted on paper these take on interesting geometrical and almost flower-like forms composed of several intersecting circles. Anku (1988, 1992) is also interested in this multiple-cycle concept.

Thirdly, I have only illustrated the simplest of the many rhythmic patterns of the various instruments and have reduced the number of drum tones to just three, when in fact many more drum tones are employed for the master-drums. The tones depicted here are a low one (L) created by hitting the drumhead in an open way, a high muted one (H) in which the drum is struck and pressed, and a very high tone (vH) produced by doubly muting the drum with the other stick or hand.

Despite these limitations these circular TUBS Figures do highlight key elements of African rhythmic structure.

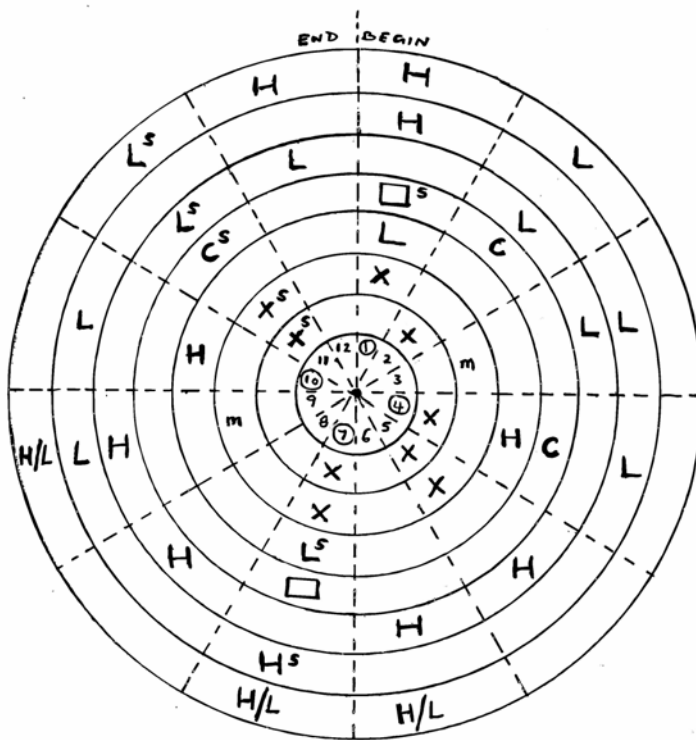


Figure 20: A circular TUBS diagram of the fundamental unit or Beat of the adowa beat – the “to me ku me” variation

*The atumpan master-drum pattern extends over two cycles and expresses the phrase “to me ku me, to me adampa” (“I am at your mercy, I am at your disposal.”) The drum pattern is identical for both cycles except that the last three strikes (on time-intervals six, seven and nine) are high tones the first time around and low the second. Therefore, in the above circular diagram they are written H/L.*

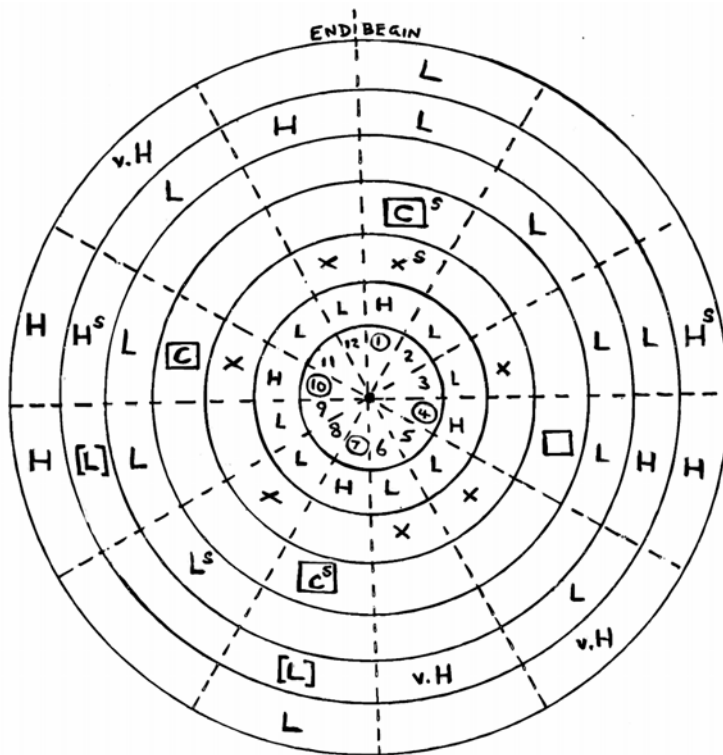


Figure 21: A circular TUBS diagram of the fundamental unit or Beat of the agbadza

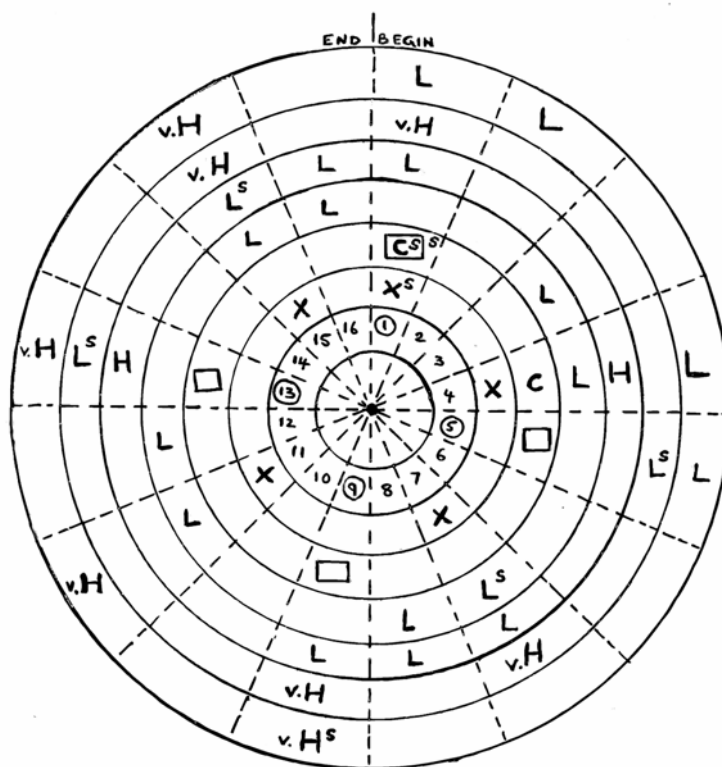


Figure 22: A Circular TUBS diagram of the fundamental unit or Beat of the gahu

*N.B. Some musicians conceive the bell pattern as starting as on offbeat on interval fifteen.*

### ***Five Features of the Cyclical African Beat***

Five points clearly emerge from the above Figures. These are the interlocking of the staggered phrases; the importance of phrase endings; the occurrence of critical junctures or reference points within the polyrhythm; the four-time pulse within the cycle of the Beat; and the curved space that is enclosed within it. These will be discussed in turn.

### ***Staggered Rhythms***

Firstly, the instruments of an African ensemble playing one of the above Beats do not all commence together but come in individually with their rhythms starting at different points on the polyrhythmic cycle. In other words they overlap and are out of phase with each other. They therefore set up what might be called a cyclical “cross-rhythmic conversation” with each other, much in the same way as do the counter-point or cross-melodic voices of old European rounds or canon-fugues; which likewise have staggered entries.

In the “to me ku me” variation of the adowa for example, the patterns of the two bells, the handclaps, the atumpan and the apentemma drums start on time-interval eleven, the foot movement begins on interval one and the odonno squeeze-drum and petia drum come in on interval seven.

For the agbadza the feet, bell and maracas open on the first time-interval and the long atsimevu master-drum begins on the third interval. The claps commence on the seventh, the squat sogo second master-drum on the tenth and the two symmetrical half-phrases of the kidi drum on the eighth interval. The high-pitched staccato and continuously beaten kagan drum takes its cue from the third beat of the bell on interval five.

For the gahu, the bell, feet and claps begin on interval one and the long atsimevu master-drum commence on interval nine. The two symmetrical sogo drum rhythms commence on the fifth and thirteenth time-intervals and the two symmetrical half-phrases of the kidi drum on the fifteenth.

Many rhythmic dialogues and overlapping call-and-responses can be picked out in the above three Beat Figures. The odonno squeeze-drum and apentemma rhythms of the adowa are complementary and exactly fit into each other's intervals, whilst the petia and apentemma drums partially dart in and out of each other's gaps. In the case of the agbadza the complimentary nature of the up and down-strokes of the agbadza axatse (maracas) rhythm has already been considered. There is also a rhythmic conversation going on between the dancers' feet and the kagan's open low notes. Then the sogo drum pattern of the agbadza begins on interval ten, exactly where the first group of kidi open low notes ends. Similarly, the gahu kidi drum phrases ends on interval thirteen precisely where the sogo commences. Conversely the last beat of the gahu atsimevu master-drum lands on time-interval five, where the sogo drum makes a debut.

### *The Juxtaposition of Beginning and End*

A second feature made obvious from the circular Figures is the juxtaposition of the beginnings and closings of rhythmic patterns into a seamless Beat.

In the case of the agbadza the most important ending of all is at its very beginning on interval one. This is not only where the handclap and atsimevu patterns end, but also immediately afterwards there is a clear break on interval two of the cycle that is almost devoid of percussion. It would seem therefore that after such a clear demarcation it would be more obvious and natural to make interval one the end of the cycle, and the bell pattern that starts on interval three its beginning; which moreover also launches the atsimevu resting rhythm.

The reason why the third time-interval is not considered by Ewe people to be the beginning of the cycle, although it seems an obvious place to put it, is quite simple. It is always feet movement that determines the main onbeat in African music, reflecting the importance of dance. For the agbadza the most significant onbeat is the one shown in the Figure as interval one, the point where the four feet movements are deemed to start.

To understand this ambivalence of beginnings and end of the agbadza bell pattern we can use the following figure in

which the pattern is analysed from two points of view; the obvious or natural way in which a novice or a non-African might hear it, and the actual way in which it is heard by both Ewe players and dancers.

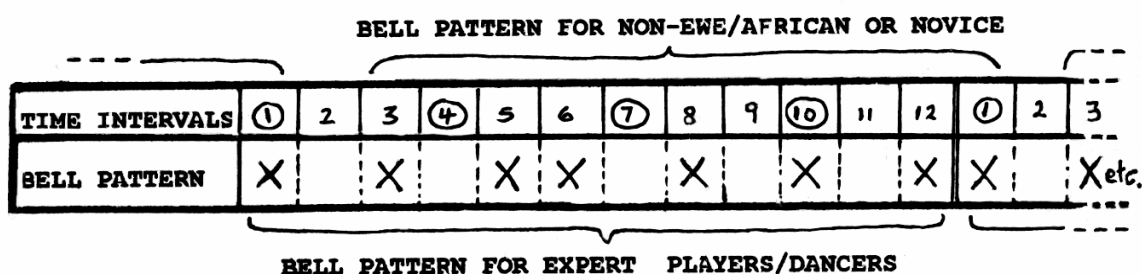


Figure 23: The agbadza bell pattern seen from two points of view

The confusing tendency of a novice or non-African to consider the bell phrase as starting on interval three and ending on interval one is that each side is separated by an interval relatively free of percussion strokes. In this scenario the bell pattern therefore has a clearly demarcated boundary.

However this obvious ending of the bell would mean that interval three, on which there are no downwards foot movements, would become the take-off point for the cycle. Therefore, the four feet movements would be offbeat, which would upset the dancers.

To further complicate things, when a group actually plays an agbadza the whole piece is introduced by the bell not kicking-off from time-interval one, but from the more obvious beginning on interval three: and then ending on interval one where the dancers and some of the other instruments commence. Conversely, when the agbadza piece finishes, all the musicians finish together on the first beat of the bell on interval one and not its actual end on interval twelve.

If a novice maintains the bell pattern from the point of view of the obvious but false beginning, he or she will be uncoordinated with the dancers. On the other hand the master-drummers actually take their cue from this "false" beginning: which is no problem for them as the actual beginning is already

long familiar to them and so they can move between the two orientations at will.<sup>32</sup>

Another feature that becomes apparent when looking at the circular Figure of the agbadza is that there is no separation between start and end of and the actual bell pattern, as they fall on the two adjacent time-intervals twelve and one. Therefore, the last and first beat of the bell blends into each other so that as one phrase ends a new one is already commencing. However, there is a rhythmic purpose in all this ambiguity. It produces a dynamic and forward pushing quality, as rhythmic stresses and strains are built up and then suddenly released at a point that paradoxically becomes the beginning of the next cycle. We will return to this topic a little later.

As noted earlier the rhythmic structure of the agbadza parallels the melodic one of the major diatonic scale. The rhythmic tension and release of the agbadza bell is therefore not surprisingly reminiscent of the situation in melody. In this case the leading note "ti", which falls on the twelfth melodic interval, points forwards to and is resolved on the keynote "doh", whose interval is the first one of the next octave.

The Akan adowa drum-dance also has significant endings. As can be seen from the circular Figure 20, the close of the main dawuro bell pattern on interval seven is as important as its beginning. It coincides with the second of the downward foot movements, and is the starting point of both the odonno squeeze drum and small petia drum phrases. Indeed, the last stroke of the bell is so crucial to the adowa that it is very useful to learn and recognise the bell pattern from time-interval seven rather than just eleven. Indeed, it is sometimes notated from starting at this end-point. Of course, in the circular Figure both perspectives can be appreciated as simply different starting points or rotations on the same circle. It is precisely this multi-perspective ability that master-drummers have.

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<sup>32</sup> It should be pointed out that the particular agbadza bell beginning is a culturally bound convention of the Ewes. Patterns that begin at different points of the circle are found in other African societies. For instance starting on the second strike of the agbadza-like bell pattern generates a percussive pattern (noted by A.M. Jones) of the Bemba of Zambia. Beginning on the fifth strike of an agbadza-like bell pattern begins a Yoruba bell pattern known as "kon-kon".



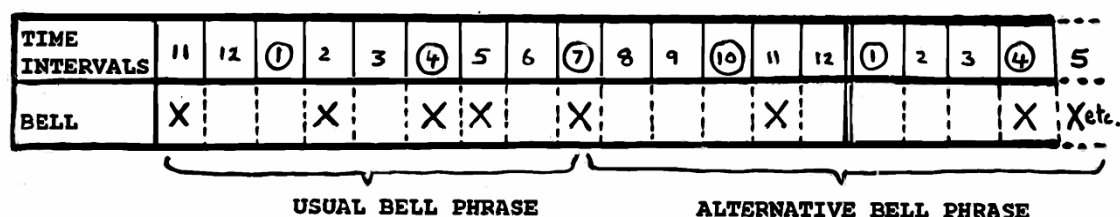


Figure 24: The adowa dawuro bell pattern seen from two points of view

As none of the strokes of the main dawuro bell of the adowa fall on interval one, why should this interval be considered to be the opening of the complete cycle by Akan performing artists? As with the agbadza, the start of the Beat is determined by the onbeat points where the dancers' feet touch the ground. In the adowa this occurs twice for every cycle, and the first stroke of the dawuro bell pattern slightly anticipates what is considered the first of these foot movements. However, the last stroke of the bell phrase exactly corresponds with the onbeat of the second foot movement producing a closure effect that helps resolve the rhythmic tension initiated by the first bell's anticipatory and syncopated/offbeat beginning.

The proneness to unify the tempo of a rhythm on the last Beat that we have noted in the agbadza and adowa is also found in the rhythmic patterns of diverse African music styles. It also helps explain the percussive attack of so much African American music, whose rhythms seem to have a pushing quality as they move towards resolution. Gunther Schuller notes (1968) it as the "forward propelling directionality" of jazz whilst Charles Keil (1970) calls it the "on top" quality of jazz drummers such as Kenny Clark, Roy Haynes and Billy Higgins.

### *Critical Junctures*

From the circular Figures of the three Beats it can be seen that there are certain time-intervals of the polyrhythm where the bell and other rhythms particularly reinforce each other. Examples include intervals one and ten of the agbadza, one, seven and eleven of the adowa and intervals one, four and fifteen in the gahu. Conversely there are intervals in which none

or only a few notes fall: number two in the agbadza, six in the adowa and intervals six, ten and fourteen in the gahu.

The conjunctures where reinforcement occurs are another feature of the African Beat, which provide players and dancers with anchor points within the whirl of rhythms. William Anku (1988) calls them “regulative time points”<sup>33</sup> whilst Richard Waterman refers to them as “key points”.

### *The Square Dance Within the Circle*

We return here again to the vital role movement and dance play in African music.<sup>34</sup> As noted in all the three examples of the Beats being discussed, and whether in 12/8 (i.e. twelve time-intervals) or 4/4 time (i.e. sixteen time-intervals), there are four evenly spaced subjectively felt onbeats. The descending feet in the cases of the agbadza and gahu dance all these out. With the adowa there is a gap in the sequence (on time-interval ten) as the foot moves down twice and once sideways on the other three onbeats. Nevertheless the overall tempo of the dancing foot in the adowa is in quadruple time rather than waltz-like triple time.

In short within the cycle of each Beat there is a square dance going on. This helps stabilise the polyrhythm and grounds the music in the earth.<sup>35</sup>

### *Circles of Sound and Silence*

To illustrate both the spacey and curved nature of African music the reader should refer to Figures 25, 26 and 27 below, which focus on some of the dance, support and resting rhythms of the adowa, agbadza and gahu beats. Each one of their

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<sup>33</sup> For William Anku (1988) the “regulative time point” is one particularly reinforced time-interval that occurs just once for each polyrhythmic cycle. For instance, it is at time-interval seven in the case of the adowa and time-interval one in the case of the agbadza.

<sup>34</sup> Even in Western music the kinetic/movement nature of rhythm is apparent if one realises that the term meter (i.e. the time signature of scored music) derives from the Greek word for foot. In other words: the notion of pacing a rhythm.

<sup>35</sup> McLachlan (2000) goes further in this geometrical analogy, as besides the full 12/8 polyrhythmic cycle containing a square (time-intervals 1, 4, 7, 10) he also adds hexagons (e.g. 1, 3, 5, 7, 9, 11) and triangles (e.g. 1, 5, 9).

separate rhythms is depicted as a separate circle in which the rhythmic spaces are highlighted in black. The white segments of the circles thus represent the time-intervals in which the percussive notes (or dance-steps) fall, and the black segments are the intervals where they are not played or danced. For the sake of clarity each note of a particular rhythm is depicted as totally filling it's allocated time-interval: perhaps not such a liberty when one recalls that these intervals are potential rhythmic areas in which notes can "swing" around.

Because Figures 25, 26 and 27 so much resemble Oriental sacred circles or mandala (like the Chinese Yin and Yang sign) I will refer to them as "acoustic mandalas". Moreover, these acoustic mandalas, like the mystical ones, embody the unity of opposites: in this musical case, the unity of sound and silence.

Of course, although it is impossible to depict this in the following two-dimensional Figures, in actual practice all the various acoustic mandalas of any particular Beat are played simultaneously. In addition, this helps make the distinction between a simple and a polyvalent gestalt (mentioned earlier) easier to appreciate. Each acoustic mandala depicted below is of a single rhythmic strand of sound and silence (figure and ground). However, when they are all played together within the particular Beat in question they compound into a polyvalent gestalt, which is a product of all the concurrently combined sounds and combined silences.

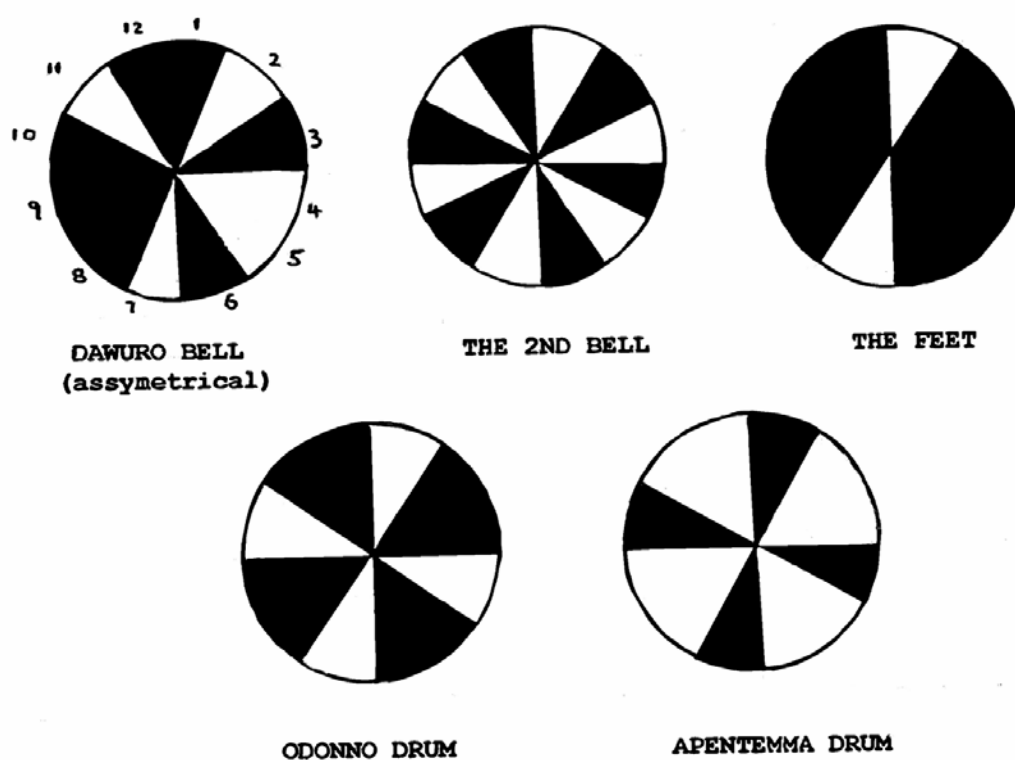


Figure 25: Some acoustic mandalas of the adowa beat (12 time-intervals)

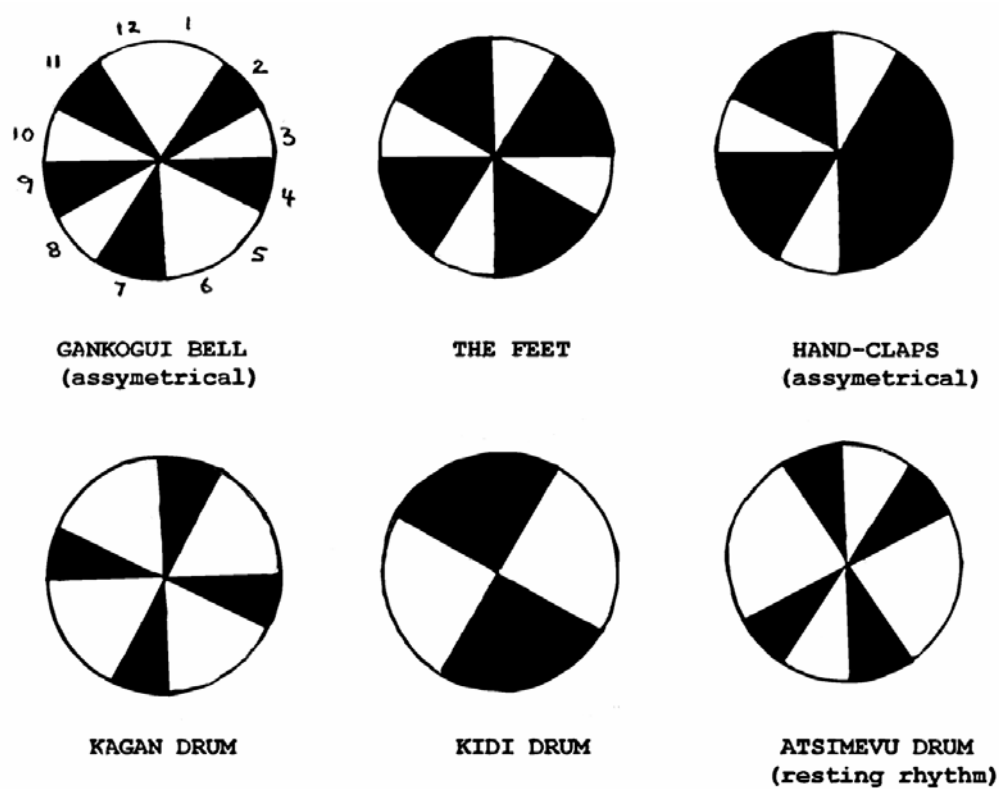


Figure 26: Some acoustic mandalas of the agbadza beat (12 time-intervals)

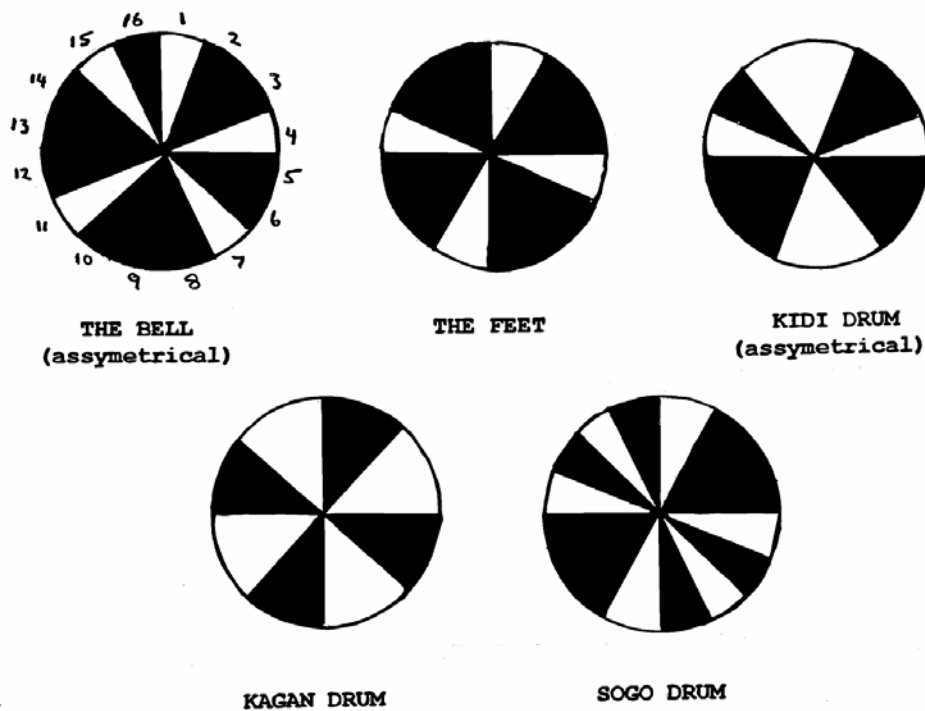


Figure 27: Some acoustic mandalas of the gahu beat (16 time-intervals)

To become skilful in African music is to be able to hone down on a single rhythm of a Beat as a curved pattern of sound and silence. However, whereas in the above acoustic mandala depictions we have had to separate out on the page the various separate sub-rhythms of particular Beat, master-players can appreciate many rhythms at a glance, thereby enabling them to instantly see the sub-rhythms in relation to one another and to the overall polyrhythm. This ability demonstrates an acute sense of rhythmic orientation, which in some ways can be compared to getting to know a geographical area such as a city. At first one might use a street map and compass to align oneself, but familiarisation creates an internalised mental map, from which one can intuitively and immediately know one's position from any point in the city whatsoever. The following is what the Ghanaian master-drummer Kwesi Asare Asuogbebi says on the matter

"Whenever I am teaching people I give each person a different rhythm which they have to play steadily. Then when they are sure they know that rhythm they can start to express themselves in their own way – as long as they can come back to the original beat. It's

like knowing where you live, so that when you go out for a walk you can know where to come back to and don't get lost".<sup>36</sup>

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<sup>36</sup> Kwesi Asare Asuogbebi, the grandnephew of the late Nana Oparabeah, High Priestess of the Ghanaian Akonadi Shrine in Larteh. See Collins (1992 and 1996) for full interview with Asare.

## Theme Six: A Driving Touch of Asymmetry – The Propulsive Bell

The above Figures clearly illustrate the rhythmic spacing of the individual percussive patterns. They also show that these support and resting rhythms are for the most part symmetrical in their distribution of sounds and silence. By this I mean that at some point on the circle the pattern can be bisected to create two identical half phrases, or in some cases even divided into four identical quarter phrases.

In the above acoustic mandala of the agbadza sub-rhythms only the bell pattern and the clap rhythm are asymmetrical. For the adowa rhythms all its are evenly spaced except the main dawuro bell. In the case of gahu all the rhythms depicted above are symmetrically spaced save the bell and kidi support drum. Thus in all three above Beats the bell patterns are consistently irregularly spaced.

The distinctive asymmetry of the bell rhythm allows one to immediately recognise exactly which polyrhythmic Beat is being played. Indeed, it is the striking of a distinctive bell pattern on its own at the beginning of a piece of music that tells the audience which polyrhythm is coming up: a sort of signature motif for the piece. Moreover, and as mentioned earlier, the bell's asymmetry relates to its role as the central power-house for the more evenly spaced rhythms; for the bell's lopsided pattern provides the driving tension and forward propulsion which keeps the music spiralling around in time and provides a lively reference for the master-drummers.

These distinguishing and propulsive benefits of asymmetry also apply to diatonic musical melodies as well as African rhythms. Just as it is the very unevenness of rhythmic time-line that helps one immediately recognise a polyrhythmic Beat, so it is the very irregularity of a scale that helps one quickly locate its key. For instance only the major key contains a tritone of six semitones between the fa and ti.

Let us continue our argument in the seven-note major scale that, as mentioned, earlier is a melodic structural equivalent to the agbadza rhythm. Firstly, the scale is based on the un-

dividable prime number seven which results in a full octave (12 semitones) being composed of a fifth interval (of seven semitones) plus a fourth interval (of five semitones). So there is a lopsided cleavage in the melodic scale in the tonal relationship of five to four<sup>37</sup>. Then there is the incorporation of an unstable chord on the seventh note "ti" of the scale, which as noted earlier drives the music forwards toward resolution to the tonic "doh". This whole melodic topic of the unstable seventh note of the scale will be discussed again in more detail in Thematic Chapter Six on asymmetry.

Let me turn back to the asymmetric African bell time-line patterns that, as previously discussed, define one full cycle of the polyrhythm in question. Although Professor J.H. Kwabena Nketia and Doctor William Anku recognise the importance of the bell pattern as time-line, they also go a step further by dividing this full bell pattern into two unequal halves, the first "A" having a dynamic and driving quality and the second "B" a closing and resolving one.<sup>38</sup> Therefore, although the usual polarised pattern of the bell time line is AB (i.e. the sequence AB, AB, etc), it is quite possible for other percussive instruments to borrow these internal bell polarities and recombine them into other patterns such as AA, AA, etc, or BB, BB, etc. As long as the total pattern remains an even number, even more unusual combinations of the two can be created, such as A, AA, B, or A, BB, AA, B. Furthermore, master-drummers utilise this internal split to insert or interpolate some of their longer solo passages.

The clap rhythms provided by the audience also helps break up the symmetry of the cycle – and a quick glance at the earlier circular TUBS Figures of the adowa's triple handclap and the gahu's double handclap will confirm this.

Let us take in particular the case of the agbadza triple handclap illustrated as an acoustic mandala (Figure 26). It can be

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<sup>37</sup> This 5:4 tonal ratio is in contrast to the ancient Greek who, always in search of perfect symmetry, divided their octave into two equal tetrachords: i.e. the ratio 4:4.

<sup>38</sup> It is because of this internal polarity of total bell patterns that these two Ghanaian musicologists call the basic time signatures 6/8 instead of 12/8, or 2/2 instead of 4/4.



clearly seen to be an edited version of the rhythm of the four on-beat foot movements. Whereas the dance-steps are in a continuous pattern of four evenly spaced downward movements, the second disappears for the clap pattern. As a result it is far easier to distinguish where you are in the polyrhythmic cycle from the clap pattern than it is from the danced one. Therefore, silence provides a recognisable beginning and end and thus becomes an anchor point in an otherwise confusing whirl of rhythm. Again, as we discussed earlier in the case of single time-line, we need to hear silence to appreciate African music.

Polyrhythmic layering, staggered entrances, multiple patterns, both symmetrical and asymmetrical, all combine to present a giddy system of musical relativity. This only begins to make sense when the music is perceived holistically: as circles with many beginnings, as a sonic architecture full of internal spaces, as beats with multiple rotations and angles. Indeed the ability of polyrhythmic music to supply an abundance of creative orientations is considered aesthetically pleasing to Africans: what the Kpelle people of Liberia call "sang".<sup>39</sup> These African sensibilities give experienced musicians and dancers the room to move and improvise, yet remain centred and poised. This brings us to the topic of the next theme.

## **Theme Seven: Mature Poise – Master-musician and Centred Dancer**

To effectively play and dance within the numerous and shifting orientations of the polyrhythmic flux involves balancing alternatives. This prerequisite also applies to the graceful walk of traditional African women with babies on backs and loads on heads, or successful African carvers whose works present many impossible angles at once: a multi-perspective aesthetic that was, incidentally, borrowed by early twentieth century painters such as Picasso and the "cubists".

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<sup>39</sup> Ruth Stone (1982 and 1986) mentions that "sang" also means a well-performed song phrase, dance step or verbal proverb.

To learn the required multiple rhythms and multiple roles of an African master performer needs patience, self-possession and time: from raw recruit to centred lead dancer, from musical apprentice to master-drummer.

Master-drummers are likely to combine the roles of master-of-ceremonies, innovative soloist, music therapist, signal messenger, proverbial poet (i.e. on talking drums) and instrument maker. Likewise, skilled singers can be political spokespersons who praise and satirise: or folk philosophers, didactic teachers, chief mourners and repositories of genealogical knowledge. Lead dancers have to be spiritual mediums, healers, ancestral characters, animal figures and state entertainers<sup>40</sup>.

However, in spite of their key role, the master performer does not dominate events by outplaying, out-singing or out-dancing everyone. If anything they rather out-listen and out-watch everyone else. As the world-renowned Ghanaian musicologist Professor J.H. Kwabena Nketia puts it<sup>41</sup> “a good musician does not generally attempt an excessive display”.

According to the master-drummer Kwesi Asare Asuogbebi,

“You can’t be selfish when you’re playing – you have to be sincere. If you have ego problems, no chance. Don’t think about yourself, ‘look at me, watch me.’ That’s no good. You have to be honest and put all your heart to it. Don’t be afraid of learning. Don’t be afraid of asking someone who knows more than you. Don’t be shy. If you know you don’t know but won’t ask, you are being insincere and full of ego. When you’re playing you’re gaining sound, then you create more sound and rhythm, but not all at once. So try to hear other things. Listen a lot. Try to read sound. What does this sound mean? It’s like a vision, a painting, how to see a picture, a sound picture. Then you add your sound to the picture to make it interesting. Like the sound another person makes is a question, and so it goes on until you finish.”<sup>42</sup>

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<sup>40</sup> Even state executioners, for just as the European guillotine fell with a roll of drums so the Akan “abrafo” danced to a special drum style when he performed an execution.

<sup>41</sup> See Nketia (1974).

<sup>42</sup> See Collins (1992 and 1996) for full interview with Asare.

It is these very egoless states of the master-musicians, which makes them so pivotal to the performance and helps them, balance the crosscurrents of the performing group and its interacting audience and performers. To continually maintain and adjust this equilibrium one cannot be a self-centred showoff. One rather has to be laid-back – to understate and underplay – and use silence as well as sound. This way space is left within which others can participate and the music will be “well ventilated” as the famous Ghanaian master-drummer Kofi Ghanaba (a.k.a. Guy Warren) terms it.<sup>43</sup>

Again this is so different from so much European art music where one individual is thrust forward into the limelight at the expense of others. A virtuoso “super star” lording over a regiment of lesser musicians and a great maestro holding his audience spellbound. Indeed, by the mid nineteenth century almost nothing was left for the audience to do, except sit back passively and be overwhelmed by the immortal works of a great composer, re-created by dazzling virtuosos and all under the control of a professional conductor’s baton. As the psychologist Otto Rank<sup>44</sup> pointed out many years ago, modern man has replaced the “immortal gods” with “immortal works” created through the solitary suffering genius of the great romantic composer.

Besides excluding the audience from the creative musical act Western art music and religious music has up to recently also excluded women.<sup>45</sup> Indeed for many centuries the female parts in Catholic choirs and early Opera were performed by castrated men known as the “castrati”, whilst female composers like Fanny Mendelssohn and Clara Schumann had to hide behind a man’s name. This is quite different from traditional African “musicking”<sup>46</sup> in which women dance, sing, compose and play

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<sup>43</sup> Personal communication.

<sup>44</sup> See 1968.

<sup>45</sup> A few notable exceptions include the twelfth century German polyphonic composer Abbess Hildegard, the thirteenth century female Troubadours or Trobairitz (like Queen Eleanor of French Aquitaine) and the seventeenth century opera composers Barbara Strozzi and Francesca Caccini.

<sup>46</sup> An expression coined by the American musicologist Christopher Small (1980 and 1987).

some light percussion instruments. In fact, women sometimes run their own music performance groups that are linked to women's initiation groups, age-sets, secret societies and economic associations. The Akan of Ghana for instance have all-female *adenkum* and *nnwonkoro* groups that perform at funerals and whose recitatives sometimes dwell negatively on the behaviour of their men-folk. It is a woman known as the *adowahemmaa* (adowa queen) who runs the adowa court dance in the Asante capital of Kumasi. The women of the Mende people of Sierra Leone have their *sande* secret societies in which they play their *bundu* drums.

In Africa, musicking is spread out more evenly between the sexes, between young and old, between the players and audience, drummer and dancers, cantor and chorus. As will be discussed later, the music is also often composed communally and owned communally.

### *The Balance of the Hot and Cool*

Percussive energy and frictional heat is a result of several factors generated within the polyrhythmic flux. One already discussed is the internal polarised interplay between on/offbeats in individual rhythms. Another is the permutational combination produced by the overlapping of multiple rhythmic patterns. However, these rhythms are not just percussive patterns but also straightforward sound waves, therefore the various sound waves of the cross-rhythms mingle and blend in a physical process that was discussed earlier known as interference.

Polyrhythmic heat and power is generated irrespective of the Beat's tempo – whether slow or fast. But, even in the very fastest types of African religious drumming<sup>47</sup> used to spark off states of trance-possession, the master-musician remains cool, calm and tranquil. To borrow a phrase from the poet T.S. Eliot they become “the still point in a turning world”.

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<sup>47</sup> So-called “fetish” or “juju” drumming: both derogatory European names for traditional African religions. “Fetish” is from the Portuguese word for false or idolatrous and “juju” is from the French word “jouer” to play; thus a *jouer-jouer* or a play-play childlike religion.

According to Ghanaian master-drummer Ibrahim Abdulai in John Chernoff's book *African Rhythms and African Sensibility*,

"We say that music is sweet when it is cool, or 'baalim': not cool in the way that water or the weather is cool, but rather it means slow or gentle. The young men (on the other hand) play 'yirin' or by heart and don't cool their bodies and take their time. If you do something that is not necessary, if you are rude or rough, if you miss the road and go to the wrong place, that is yirin. It has no meaning. The young people dance faster and they usually play faster too. When they are playing, before an old man will play this or that, the young man is already on top of it. Sometimes when you know something too much you can do it in a rough way and add something unnecessary inside. If you beat a drum very hard the sound will reduce, and if your wrist is too fast the drum will not sound. 'My wrist is fast' – that is not drumming. As you are beating, it is your heart that is talking and what your heart is going to say your hand will collect it and play. Unless you cool your heart your drumming will not stand."

Of course the musical wisdom concerning the unity of hot and cool, rhythm and counter-rhythm, beginnings and ends, inner and outer, is not only found in Africa. In the classical music of India, for instance, there is space for improvisation within the structural limits of the particular raga piece. Like the African Beat, the ragas are polyrhythmic and composed of repeated musical cycles. Indeed, in some types of raga there is a special Beat called the "khali" which is omitted entirely from the rhythmic pattern, to indicate the beginning of a new cycle: much like the muting of the first bell stroke in the Akan adowa discussed earlier.

It is the calm, collected and laid-back aspect of African and Oriental music that has influenced some modernist schools of music in their opposition to the over-statement of Romantic art music. One early twentieth century example is the French Impressionist composer Debussy, who borrowed ideas from Javanese polyphonic music, including a minimalist approach that stood in stark contrast to the over-emphatic works of late German Romantic composers such as Richard Wagner<sup>48</sup>. More recently African/Oriental influences were involved in musical

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<sup>48</sup> Others were Gustav Mahler and Richard Strauss.

reactions to the Serial or Twelve Tone music of Schoenberg and Webern whose works were based on excessively precise mathematical rules. This was the minimalist music<sup>49</sup> of the American composers La Monte Young, Terry Riley, Philip Glass and Steve Reich. Their honed-down sounds based on gradual phased variations within a repeated musical polyphonic cycle were partly borrowed from Indian, Indonesian and African musical techniques. In fact, Steve Reich studied African drumming in Ghana.<sup>50</sup>

All over the world, millions of people, including avant-garde art musicians and international pop-music fans are finding satisfaction in the popular dance-music of the Africa and the Black Americas. All of these are rooted in the age-old African wisdom that fosters rhythmic co-ordination, allows inspirational breathing space, balances the on with the offbeat, merges the head and feet and embraces audiences and performers alike into the communion of the Beat.

How African music balances rhythmic discipline and order with the free spontaneous extemporisation is the topic that follows.

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<sup>49</sup> Another response to this over-determined Serial Music was the ultra-spontaneous "indeterminate" music of the American composer John Cage and Karlheinz Stockhausen that is based on the theory of random numbers and even the Chinese prophetic Book of Changes, or I Ching.

<sup>50</sup> This was at the Institute of African Studies at the University of Ghana in the early 1970's when I personally met him.

## Theme Eight: Freedom and Necessity – The Art of Improvisation

Spontaneity and the freedom to improvise are an important component of African music making. There is the adlibbing of recitative<sup>51</sup> singers, the conversations of the talking drums and the improvised movements of dancers within a corpus of stylised body movements and hand gestures. Furthermore, African musicians do not follow the bell time-line as a Westerner would follow the conductor's baton or bar lines of a written score, but rather use the bell to reference an internalised tempo and pulse, as in Richard Waterman "metronome sense" mentioned earlier.

Here, we are specifically concerned with the rhythmic side of African music and we have already discussed three principle modes of rhythmic extemporisation. One is the ability to "swing" in the microtime of the offbeat spaces of percussive patterns. Another is to draw on the huge variety of permutations available from the complex network of multiple cross-rhythms. Thirdly, there is the ability to effortlessly switch orientations from figure to ground, sound to silence, or between the multiple entries, rotations and angles of the circular beat.

This freedom does not mean that African rhythms have no firm acoustic structure, as is apparent from the various polyrhythms examined earlier. Indeed, it is precisely frameworks that provide internal space, permutational complexity and multiple viewpoints. In other words rhythmic improvisation in African music depends first on discipline to master individual rhythms and knit these together into a complex multi-rhythmic structure.

These techniques and skills are gained from the multitude of children's rhythmic games and toys that occur in Africa, from being involved in the many ceremonies and festivals that involve music, and from dancing and clapping to the music of performing groups. Those who are more serious will, of course, join such groups, and actual membership in them is usually

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<sup>51</sup> Also called the "declamatory" style that is non-strophic, i.e. the words are not organised into verses but are free in the same sense that speech is.

based on an apprentice system. The craft is taught to youngsters and novices slowly in stages<sup>52</sup> and after completion, there is often an initiation ceremony.

It is only at the master-musician level that one finally has the training to handle strict rhythmic structures and the improvisatory space, “ventilations” and orientations they paradoxically provide. In many ways a master-musician’s sensitivity to sonic spaces and angles is similar to that of a sculptor or carver. A master carver explores and creates space by chipping away stone or wood. This results in figures whose boundaries lie between solid matter and emptiness. Moreover, many African carvings (and masks) contain multiple planes and perspectives that are impossible in real life<sup>53</sup>, a feature that, as noted earlier, has had a profound affect on Western modern art. Therefore, whether in physical or acoustic materials, the African artistic aesthetic furnishes limitless possible creative spaces, contours and angles.

It is all a question of the age-old riddle of the free mind versus material necessity, with the master-musician or dancer being on the borderline of the two. He or she is neither “frozen-in” by rhythmic structures and scaffolding nor “over-excited” by their limitless spaces and orientations. They rather blend both control and creativity in the overall sounds and motions of the African Beat.

How different from the many European musical and other artistic styles, which have a tendency to become refined, overstated and petrified forms that exhaust their own logical resources and are ultimately overthrown by people looking for new artistic freedom and flexibility. Henry Pleasants calls this process *A Death of a Music*<sup>54</sup>, which Kenneth Burke (1966) calls “entelechy” and Arthur Koestler “artistic infolding”. This cycle of increasingly rigid stylistic rules leading to artistic implosion

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<sup>52</sup> African master-musicians can be quite strict and will rap the knuckles of any young apprentice who misses one.

<sup>53</sup> This multi-perspective African artistic feature is also found on the friezes and murals of ancient Egypt, whose figures stride sideways with face impossibly forwards.

<sup>54</sup> This musicologist wrote a book with this title.



and replacement has occurred repeatedly in European music history.

For instance, the over-ornamented music of seventeenth century late baroque music was replaced by the simple symmetries of eighteenth-century classical music<sup>55</sup>. However, by the nineteenth century classical music itself had become so regulated and polished that Romantic composers such as Liszt, Schubert, Chopin, Tchaikovsky, and Wagner turned to rough folk music for inspiration and new ideas. When by the early twentieth century Romantic music in turn became too overstated, some modern composers started to decompose the whole harmonic apparatus that art musicians had been built up over several hundred years. One of the first proponents of this was the French Impressionist composer Claude Debussy who juxtaposed dissonant melodic intervals that would have been anathema to earlier composers. The composers Stravinsky, Schoenberg further and Webern took this dissonance even who superimposed keys that clashed with one another (polytonal music) or did away with fixed keys altogether (i.e. atonal music). All this for them symbolised the demise of Western musical law and order and the rise of a new musical freedom.<sup>56</sup>

A more recent example of this death of music has occurred in the realm of white rock music. It was originally called rock 'n' roll and was the version of African American rhythm 'n' blues dance-music adopted by the white youth of the 1950's as a reaction to the over-commercialised popular music of Tin Pan Alley. Then in the 1970's rock music too became too polished and contrived in the hands of psychedelic superstars playing overproduced music for passive non-dancing audiences. Therefore, this "psychedelic", "acid" or "head" rock music gave

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<sup>55</sup> Indeed the word baroque was an uncomplimentary expression (it means misshaped pearl) invented to describe seventeenth century music by musicians like Haydn and Mozart who were in search of clean classical lines.

<sup>56</sup> Atonal and poly-tonal music was linked to the early twentieth century "Expressionist" movement in the arts that was interested in exploring the irrational and unconscious. Arnold Schoenberg and Anton von Webern later moved away from this musical freedom and created the over-determined "serial" music based on strict mathematical principles.

way to more roughly produced “punk rock” that got young people forming pop bands and dancing again.

So whether in Western art or popular music the cycle continues: from classical simplicity to overrefinement, then to be replaced by artistic immediacy and then again back to over elaborate rules and regulations. European music thus seems to zigzag between extremes, from glossy and overstated and fossilised laws on the one hand, to artistic anarchy, freak-out and deconstruction on the other. These two tendencies cannot seem to be brought together harmoniously for any length of time. The centre cannot hold.

In African music, however, the two polarities of strict external order and inner improvisational freedom are brought together in a single performance. Particularly instrumental in this is the poise and mature self-possession of the master-musician. African American modern jazz musicians of the 1950’s called this stance “Daddy Cool” – and this is the topic of the final Theme.

## Theme Nine: The Participatory Mode – Audience Involvement

The rhythmic dialogues and swinging space of African music draws everyone in. There is always room for a new rhythm, a new response, a new interpretation: from the lead drummer to the small boy who plays the bell, from the audience who sing and clap, to the dancers who add body rhythms and hand gestures.

As already mentioned, Christopher Small calls the immediate and communal approach to making music found in many folk idioms “musicking”, and contrasts it to European art performances where clapping and the tapping of feet by the audience during the show would be taken as a sign of disapproval. In Africa it would be seen as a sign of disapproval if no one clapped or tapped, or danced for that matter, during a performance.

Furthermore, African music is of a polyphonic, equivocal and communal nature, and so puts only a modest emphasis on the individual prowess of the composers and players; and more on collective creation and recreation. The music is also often communally owned<sup>57</sup>. Because of these features traditional African music can be compared to the non-individualistic music of medieval European with its famous Anon (or anonymous composer) and polyphonic choirs in which no one voice is more important than another.

In old Europe polyphony was known as counterpoint and some believe the intertwined cross- or counter-melodies may have reflected the participatory ideals of the period – the paternalistic fellowship of Catholic Christendom. However, polyphony was superseded<sup>58</sup> in the sixteen hundreds by the monodic<sup>59</sup> style of the Baroque<sup>60</sup> period, with its emphasis on

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<sup>57</sup> For instance, by religious cults, musical guilds, griot families, age-sets, secret societies and chiefly courts.

<sup>58</sup> Polyphonic choirs and instrumental ensembles extended into the Renaissance period and died out (except in the form of the fugue) during the following baroque period.

<sup>59</sup> A form of homophonic music that emphasises one voice or instrument.

recognised composers, virtuoso stars and single melody line. Incidentally, an equivalent process occurred in European painting around the same time, with the emergence of great masters and laws of visual perspective based on the single fixed eye of the beholder: the antithesis of the multi-angled masks and figures of Africa discussed earlier. This growth of European artistic individualism was part of a general movement in Europe away from the holy community ideals of an increasingly oppressive Catholic Church and towards a more secular, personal and privatised view of things.

In traditional Africa the music is also collective and participatory, but the community its polyphony symbolises is of a much smaller, direct and intimate type than that of Catholic Christendom.

If polyphony is one mode of projecting participatory ideals in Africa, another is the fact that African music involves many other types of art and performance than just music and dance. It presents a multimedia art-form that involves masquerades, ritual drama, epic poetry, paintings, costume, carvings, even athletics, and the martial arts. To quote the Nigerian composer Akin Euba "music, dance poetry and dramatic expression are all fused together," whilst the Ghanaian composer Phillip Gbeko<sup>61</sup> states these artistic components "must not be separated." Indeed, in many African languages the word for music also implies drumming, singing, dancing, acting and play and performance in general.<sup>62</sup>

This situation is quite different from Europe. After the seventeenth-century Baroque period the roles of the professional actor, musician, dancer, poet and conductor became sharply separated and the performing arts themselves became compartmentalised into ballet, instrumental music, poetry recitals, theatre, mime, puppetry (i.e. mini-masks), and costume

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<sup>60</sup> As will be referred to again later, it was during the baroque and following Classical periods that the laws of fixed keys and "tonal functional harmony" were worked out.

<sup>61</sup> For Euba see 1970. Phillip Gbeko is a famous Ghanaian choral and art composer who wrote Ghana's national anthem in 1957.

<sup>62</sup> Some examples are the Igbo word "nkwa", the Kpelle word "pele", the Bantu "ngoma", the Akan "agoromma" and the Ewe "fele".

shows (i.e. fashion-shows). At the very same time the old Elizabethan theatre-in-the-round in which audiences sat on three sides of the stage and interacted with the actors, gave way to the picture-frame stage and its proscenium arch that clearly separates the audience from the performers.

The African performing arts, on the other hand, fuses various art-forms and includes a participating audience of young and old who sing clap and dance within the performance space, within the dance ring, within the communion of the Beat.

## CHAPTER TWO: THE TRADITIONAL AFRICAN MACROCOSM AND WORLDVIEW

The same nine thematic categories of Chapter One will be applied here to the broader area of traditional African life: its social, political and economic organisations, its religions, philosophies and general worldviews. Additional reference will also be made to similar arrangements and ideas from other pre-industrial and ancient societies. However, to emphasise the cultural continuity of Black Africa and its long connection with the Mediterranean and Asia, it is first necessary to provide a short history of the continent.<sup>63</sup>

### Introductory History of Africa

The origin of humanity lies in Africa, more precisely in the East African Rift Valley where early Stone Age hominids known as Australopithecines evolved approximately 5,000,000 years ago. One branch of them developed into *Homo erectus* that slowly spread to Mediterranean Europe, Asia and China 1,500,000 years ago. According to speculations by the musicologists John Blacking and Bruno Nettl<sup>64</sup>, evidence has been found that these Old Stone Age ancestors used fire and may have possessed a kind of communication in which language, rhythm, music and ritual movements were all fused into one.

The origin of music, which seems to be species specific to the human race, is shrouded in mystery and probably arose from a number of factors. Charles Darwin suggested melody evolved from primitive human mating and territorial calls, whilst the psychologist Carl Stump believed extended vowels, high pitches

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<sup>63</sup> Some good reference books on the pre and early history of Africa include Alimen (1957), Ardrey (1961), Basil Davidson (1972), Fage (1978), McBurney (1960), Oliver and Fage (1974), Oakley (1996), Posnansky (1969) and Ogot and Kieran (1968).

<sup>64</sup> See Blacking (1974) and Nettl (1956).

and narrow frequencies point to yodel-like long distance communication and call signals as music's origin. Quite different theories point out that rhythmic chanting was used to concentrate muscle power for certain types of communal work, while musical and rhythmical narratives were used as to aid memory. Music may have also arisen as stylised forms of shouts and loud howls, soft purrs and other innate emotional vocalisations, or as an extension of the cooing and crooning associated with grooming rituals and the rhythmic rocking of infants by their mothers.

Whatever the origin, musical instruments such as bone whistles and stone bullroarers have been found in *Homo sapiens* habitats. *Homo sapiens* replaced *Homo erectus* about 200,000 years ago. Like the earlier *Homo erectus* these Middle Stone Age people also originated in Africa and included the Rhodesians of Africa itself and the Neanderthals: the latter spreading into the Mediterranean area and Ice Age Northern Europe where they lived in caves which they painted with abstract geometrical designs. The engravings on animal bones by this early type of *Homo sapiens* suggest they may have had a lunar calendar and possibly a lunar cult. Another indication of their religious-cum-artistic sensibility is that 70,000 years ago they were burying their dead and painting them with red ochre or haematite, implying a reverence for the deceased. Most certainly religion is one component of the evolution of music, as both singing and rhythmic movement became special communicative modes of contacting the supernatural.

Modern humans (Caucasoid, Mongoloid, Negroid) replaced the first artists who initially evolved in Africa from a relatively small group that spread out from the continent around 40,000 years ago, making present-day humanity descendents from the same African Eve. Their cave-paintings in Africa and Europe depict human and animal figures, hinting at fertility cults based on sacred or totemic animals, with flutes and dancing figures, while some are dressed as animals. Some caves in Southern France contain natural rock-gongs. These were hunter-gatherer societies where the genders enjoyed a separate but equal

economic arrangement, with the men hunting and the women and children gathering food.

One northerly branch of these Late Stone Age people from Russia and Northern Europe<sup>65</sup> left behind thousands of carved stone and ivory “Venus” figurines<sup>66</sup>, whilst thirty thousand of these “Venus” statuettes have also been found in Southeast Europe. All this intimates the widespread ancient worship of fertility goddesses.

The evidence therefore suggests that during Late Stone Age times shamanistic or animistic<sup>67</sup> religions were practised by hunter-gatherer societies from Africa to Siberia and across the Bering Straits to America. These were polytheistic fertility cults based on ancestor worship, the belief in totemic animals, the use of a lunar calendar,<sup>68</sup> and the glorification of fecund female nature spirits. Based on evidence from surviving hunter-gatherer societies it is likely that these religious cults were run by priests and priestesses who combined the roles of political and spiritual leader, medicine-man/woman, oral historian and soothsayer. Moreover, they officiated at ceremonies that used music, dance, ritual drama and sometimes psychotropic drugs (such as mushrooms and various natural herbs) to trigger oracular trance and possession.

Mankind first began to domesticate plants and animals 7,000 to 10,000 years ago during the so-called Neolithic Revolution. This is thought to have begun in the so-called “Fertile Crescent” (between the Nile and Euphrates rivers) before moving into the Mediterranean and Europe<sup>69</sup>. During the Neolithic period

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<sup>65</sup> The Gravettian Culture of archaeologists.

<sup>66</sup> Some Russian examples which are punched with holes are thought to be codes concerning the movement of sun, moon and planets.

<sup>67</sup> These are pantheistic religions that involve a belief that matter is vitalised or “animated” by spiritual forces.

<sup>68</sup> The oldest known mathematical/lunar calendrical artefact (pre the Russians ones discussed above) is a 37,000 year old baboon bone dug up from a cave in the Lebombo Mountains of South Africa/Swaziland with twenty-nine notches on it. A later (9000-6500 BC) African example is the Ishango Bone from the Congo (see Bogoshi et al. 1987).

<sup>69</sup> An expression coined by Gordon Childe (1946). The Neolithic culture spread into Western Europe westwards via the so-called Megalithic culture, noted for its burial mounds and its observatories-cum-temples of huge standing stones (i.e.



worship continued to focus mainly on sacred animals, ancestors and “great mother” deity. In the latter case, as “mother nature” the dead were dedicated to her by being buried in her, rather than being cremated: a custom associated with patrilineal and patriarchal<sup>70</sup> Indo-Europeans sky-god worshippers.

Living animals or sometimes humans were also sacrificed to “mother nature” deity to ensure a good harvest. Nevertheless, the patriarchy latent in the male-bonding groups of hunter-gatherer societies became stronger in Neolithic times, when grain surpluses could maintain stable urban settlements with a permanent and masculine military apparatus.

The first urban communities established around five thousand years ago, were mainly situated near large rivers, and required a centralised society to make maximum use of annual floods. The ancient Egyptians, living on the banks of the Nile are an example. In pre-dynastic times they ritually sacrificed their early kings or pharaohs during the annual Sed Festival and reckoned descent matrilineally through the female line. We shall return to this later. The equally old Sumerian civilisation of Mesopotamia was located on the flood plains between the Tigris and the Euphrates. Its inhabitants worshipped the mother of all gods, Ninhursag.<sup>71</sup>

It was around 2000 BC that the Aegean civilisation appeared in towns that dotted that Eastern Mediterranean islands and perimeter. The Aegean people revered the “Great Mother” in many forms: as sacred caves and “navel” or Omphalos Stones (i.e. mother nature’s navel) and as the barley and snake goddess Da, Danae or Demeter. In Anatolia and Phoenicia the Aegean

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megaliths), such as those at Carnac in France and Stonehenge in England. Remains of such megalithic temples have been found as far a field as the River Danube, the North African coast and as far south as Senegambia and Ethiopia.

<sup>70</sup> Patrilineal means that descent is reckoned through the male line and patriarchal societies are ones in which social and ritual authority is vested in males. Many ancient African and Mediterranean societies, on the other hand, were matrilineal (female descent).

<sup>71</sup> Further east and a little later in time (about 2000 BC) the earliest Indian cities of Harappa and Mohenjo Daro were built in the valley of the River Indus, and their supreme deity was a snake goddess. In China, around this time, there was the matrilineal Yang Shao culture of the Yellow River area whose supreme deity was Nu Gua, mother of the God Fu Xi, later demoted to his wife during the patrilineal Shang and Chou dynasties.

goddess of love was called Ishtar or Astarte which the Greeks and Romans called Aphrodite and Venus. In archaic Greece there was Gaia the earth mother of Chronos (Father Time) and Hera, who in turn was the mother of the giant Heracles. Crete had its pale-faced moon goddess Pasiphae and Libya its goddess Neith. On the Aegean island of Delos the cult of Artemis flourished that was connected with the legendary women Amazon warriors of the Levant and North Africa.

In the ancient Aegean, all the male gods were children of the various "Great Mother" deities and in many myths they were killed and reborn in the service of the earth's fertility. This sacrifice was actually carried out in Crete, where the King Minos had to die after spending a year as husband of the High Priestess, after which a new king of the waxing year took his place. Later, this annual change in the agricultural seasons was celebrated with animal rather than human sacrifice.

In spite of what has just been said about the Neolithic Revolution first appearing in the Fertile Crescent, there is now evidence that it began in Africa much earlier than once thought. Recent research in East Africa and the Upper Nile Valley, (i.e. Southern Egypt), has suggested that incipient agriculture may have emerged there as early, if not earlier, than in the area between the Nile and the Euphrates rivers, previously considered by historians, like Gordon Childe, to be the earliest Neolithic area. It is also now accepted that yet another early major Neolithic centre in Africa developed in what was once the fertile Sahara. Animals were domesticated there and the population began to make pottery around eight thousand years ago: at least a thousand years before the ancient Egyptians.

These black pastoralists, for they were descendants of the Negro populations which emerged in the Sahel region of West Africa about fifteen thousand years ago, have left us with many rock paintings of their animals and of themselves, tattooed and wearing masks in typical African fashion. However, this society did not last, as between five and six thousand years ago, through a combination of over-grazing and long-term climatic change, the Sahara began to turn into a great dust bowl. This gradually pushed the pastoralists in two directions – southwest

to the forest regions of West Africa and southeast to the Sudan and the Upper Nile Valley.

This double migration eventually produced the major linguistic differences between the present-day Western and Eastern Sudanic families of African languages, called the Niger-Congo and the Nilo-Saharan respectively. Those who migrated east were the ancestors of today's Nilotic cattle people of Eastern Africa. Those who took a southerly course skirting forests through river valleys ended up in the West African coastal regions where they became settled agriculturalists. There is abundant archaeological evidence of their early farming activities.

Despite the increasing desiccation of the Sahara, there was four thousand years ago an active trans-Saharan trade going on between the Mediterranean and West Africa. The then numerous desert oases linked the two areas commercially, with cloth and beads going southwards and gold, copper and ivory northwards. Saharan rock paintings depict horses-and-chariots and figure-of-eight shields, typical of the ancient Libyans and Aegeans.<sup>72</sup> However, by approximately 700 BC so many oases had dried up that traders began changing from horses to camels. Indeed, by Roman times it was quite impossible for horses to cross the desert, which prevented the expansion of the Roman Empire into Africa, as their cavalry could not move southwards beyond the North African desert town of Djado in the Fezzan.

To a certain extent the Neolithic peoples who lived around the West African forest lost contact with the north and developed in a largely autonomous fashion. By 500 BC they had skipped the Bronze Age and had jumped straight into the Iron Age, starting at Nok, in Nigeria. With iron instead of stone axes, these people were able to clear dense jungle rather than remaining on its outer fringes. One more factor was necessary for the final taming of the forest. This was the introduction of Southeast Asian forest crops such as banana, plantain and cocoyam, brought to Africa from Indonesia by longboat two thousand years ago. It was a combination of iron hoes and axes

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<sup>72</sup> See Brentjes (1969).

and the slash-and-burn cultivation of these imported forest crops that led to the “population explosion” of Bantu-speaking peoples. This in turn led to their two millennia spread from the Nigerian and Cameroonian area of West Africa southwards through the forests of central to South Africa.

In spite of the increasing isolation of black Africa due to the drying of the Sahara, trade links were maintained with post-Roman Muslim North Africa through a series of powerful medieval Islamic African empires, which were located in the Southern Sahel stretches of the Sahara, namely the ancient Sudanic empires of Ghana, Mali, Songhai and the Hausa Emirates that traded by camel between the Mediterranean and the forest areas of West Africa.<sup>73</sup>

What finally put an effective end to this trans-Saharan trade between North and West Africa was not increasing desertification, but rather the coming of the Europeans to Africa. With their sailing ships they by-passed Muslim North Africa and diverted West African gold and trade goods away from the trans-Saharan route. Rather than northwards African goods now went south to the European ports on the West African (Guinea) coast. This led to the decline of the Islamic Sudanic empires and the emergence of more southerly centralised black forest states: such as the Akan kingdom of Ashanti/Asante, the Fon kingdom of Dahomey and the Yoruba ones of Benin and Oyo. The coming of the Europeans, likewise, put an end to the Afro-Arabic Zanj states of the East African coast. These states had grown up in medieval times from a fusion of Arab and African cultures; a blending that also led to the creation of the East African trade language, Swahili. However, with the destruction of the Zanj states by the Europeans, the purely African Bantu-speaking kingdoms of the interior who traded with them, like Enguruka and Great Zimbabwe,<sup>74</sup> declined in power.

To explain the origins of the many well-organised states the Europeans met in Africa (like Benin, Dahomey, Great Zimbabwe,

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<sup>73</sup> See Bovill (1968).

<sup>74</sup> See Summers (1963).

etc.) colonial historians produced the “Hamitic hypothesis”. They simply could not believe that civilisation could be indigenous to Africa but must be a result of whites or whitish Hamitic peoples such as the Egyptians, Romans, Jews or Arabs having invaded the so-called “Dark Continent” from the north. In East Africa for example, these “Hamitic” civilisers were equated by colonial anthropologists with the “Abecwesi” of Bantu legend, light-skinned invaders who formed the first states amongst the Bantu-speaking peoples. According to these writers<sup>75</sup>, the Abecwesi were an African folk-memory of the ancient Egyptians who had moved south. In reality, however, these Abecwesi were simply Nilotic African pastoralists who migrated south and created ruling dynasties over the local Bantu farmers. The encroaching desert had in turn, as mentioned earlier, pushed these Nilotes south.

Let me summarise these various points. Incipient agriculture was practised almost as early in sub-Saharan Africa as in the Fertile Crescent, Saharan Africans domesticated animals before the pre-dynastic Egyptians and the Nigerian Iron Age started before that of North Africa. A pattern thereby emerges of a civilisation spreading from a common centre – the once fertile Sahara. It was there that the black humanity originated, carrying pastoralism, agriculture and technology with them as they migrated in all directions out of the Sahara. Indeed one branch of the Saharan people who moved northeast influenced the Badarian ancestors of the ancient Egyptians.

The Sahara has therefore given the continent much of its cultural continuity, as well as providing a two-way communication and trading link between black Africa and North Africa and the Mediterranean. Ironically, the Europeans – the very people who talked about Africa’s isolation from the mainstream of history, finally broke this link.

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<sup>75</sup> Such as Henry Rider Haggard in his fanciful book *King Solomon’s Mines*.



## The African Macrocosm

We now turn to the main subject of this chapter; the way the nine musical themes explored in the previous chapter can be related to the traditional worldviews and social organisations of black Africa.

### Theme One: Polarised Tension – Divine Twins and Sexual Metaphors

#### *The Twinning of Spiritual On and Offbeats*

African polytheistic religions are founded upon binary oppositions, just as the percussive polarity of the on and offbeat is the basis of individual African rhythm. In many myths of origin the creator separates the universe into a profusion of mirror images and inverted domains: land and sea, day and night, male and female, sacred and profane, good and evil<sup>76</sup>, the left hand and the right<sup>77</sup>, time and space, sun and moon, heavens and earth. It is the stresses, strains, and endless permutations of these oppositions that are the warp and weft of traditional African cosmology.

Many African societies such as the Yoruba, Igbo and Mossi of West Africa believe that the supreme being is twinned, the two sides controlling the sky and earth respectively. As a typical example we can turn to East Africa and the matrilineal Ila people of modern Zambia whose whole cosmology is sexually polarised. At the summit of their spiritual hierarchy are the supreme sky-god Lesa and his feminine cohort/messenger Bulongo (clay).<sup>78</sup> At the next level below is masculine time and feminine geographical space, followed by a rain-god who

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<sup>76</sup> This idea that the supreme being can contain both good and evil is quite different from Christian “transcendental dualism” that considers there to be a holy war between the forces of god and those of ultra-evil represented by Satan.

<sup>77</sup> For instance, Mawu-Lisa, the androgynous or twin supreme being of the Southern Anlo Ewe people of Ghana, mythically begets the left-handed hunter god Kunde and his right-handed female consort Tserva; a divine pair that heads a pantheon of deity related to a spiritual healing and anti-witchcraft cult known as Blekete.

<sup>78</sup> Ila cosmology is dealt with in some detail by Zuesse (1979).

fertilises the earth-goddess. Lower are the male ancestral founders and female nature spirits. The bass of the hierarchy ends up with the feminine and masculine souls of a person: namely the male "individual-soul" that is associated with ones consciousness and community order and the female "life-soul" associated with the unconsciousness and the wilderness.<sup>79</sup>

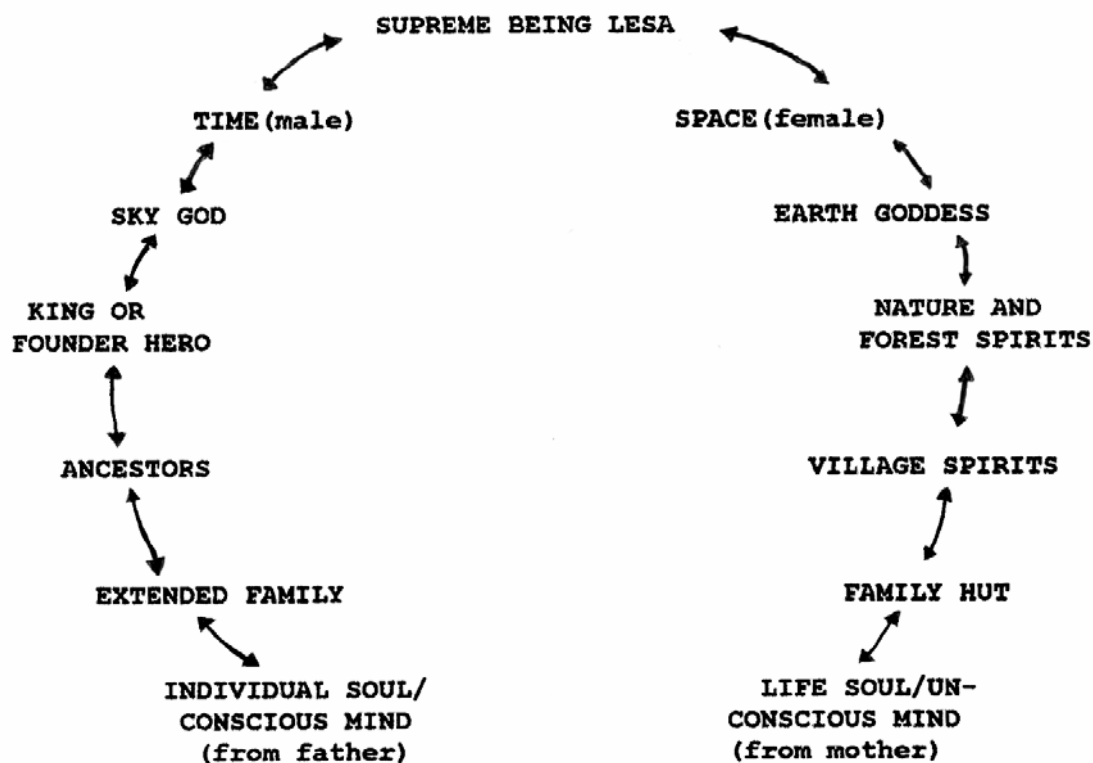


Figure 29: The polarised Ila view do the universe (after Zuesse 1979)

Cosmological opposites are found in many other polytheistic religions, besides those of Africa. Old China had its yielding feminine earth principal known as Yin (shady) that is in eternal tension with the firm masculine sky-principal called Yang (bright). In Hindu India it is Kali, the all-devouring spirit of time, versus Parvati the spirit of benign space. The ancient Aegean mystical emblem of polarity was the double-headed axe or Labrys. In many cases this mythical dualism is personified in the

<sup>79</sup> It is because locational space is revered via female deity that Ila huts and even whole villages are in the shape of a womb and their entrances involve special rituals for entering and leaving (ibid.).



heavenly twins and divine couples; for instance the ancient Greek gods of the summer and winter, Apollo and Dionysus.<sup>80</sup>

As can be seen, the old polytheistic religions often aligned these spiritual contraries sexually: the male deity and his female consort, sister, wife or mother. But whatever the relationship it was usually the feminine gender which represented the sea, land, nature, birth, growth, the creative muses and the menstrual moon; whereas the masculine gender personified death, destruction and seasonal decay, as well as the life-giving sun and rains. In short the archetypal pair of bountiful mother nature and sickle-wielding father time. As would be expected, priestesses, prophetesses and royal princesses were also important for these religions. This feminine power is also found in traditional Africa to which we now turn.

### ***Sexual Polarity in Africa***

In Chapter One it was mentioned that African sometimes classify their instruments on a gender basis, male and female drums, tones and so on. In this chapter we will come across the use of polarised sexual metaphors in various broad areas: lineage systems, ritual authority patterns, as founding “fathers”, in architectural layout, the separation of space and time and in African cosmologies such as the Ila one just discussed.

But here we will turn first to the strength of the feminine in Africa, and it should be noted that although traditional African societies were fundamentally patriarchal, women have and still do to some extent wield considerable ceremonial, economic, social and artistic power. They perform the bulk of the continent’s agricultural work, dominate the local markets, maintain secret societies and sometimes have even held executive power. Women also customarily play a major role in art production, although this often constitutes a separate sphere of activity from that of men. Thus certain styles of traditional music are open to everybody whilst others are exclusively for

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<sup>80</sup> Other examples include the Indian Hindu god Shiva whose destructive power is counteracted by the creative energy of the goddess Shakti and the Japanese goddess of social peace Wa and her unruly brother.

men or women.<sup>81</sup> First on this topic of sexual polarity and the power of women let us move back in time.

In ancient Egypt inheritance passed matrilineally through the female line. Furthermore, the practice of annually sacrificing the very earliest kings or pharaohs was, by dynastic times (3200 BC), modified into the Sed Festival, a re-investiture ceremony held every thirty years that enabled the pharaoh to be spiritually “re-born” by marrying his sister in whom the divine blood flowed. During this Old Kingdom women played musical instruments, ran choirs and there is a 2500 BC tomb picture of the country’s first female composer, Hakenu.

The number of goddesses in their religious pantheons can also appreciate the importance of the feminine spirit in ancient North Africa.<sup>82</sup> These included, Bastet, the cat-headed and rattle playing goddess of love, Ejo the cobra-goddess of the Nile Delta, Hathor the cow-goddess of music and dance from Thebes and Seshut the “the keeper of books”. The supreme goddess of the neighbouring Libyans was the goddess Neith<sup>83</sup>, called Sais in Egypt. Ancient Libya was also one of the mythological homes of the legendary Amazon warrior-women who cut off their right breasts to make the use of the bow and sword easier. Their spiritual patron was Artemis (Roman Diana), Mistress of the Wild Beasts.

Many of the Egyptian goddesses were the sisters or wives of important gods. For example, Ammon,<sup>84</sup> the ram-headed sun

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<sup>81</sup> Women in West Africa normally dance, sing and play light percussion instruments, whereas the men also play drum and horns (that are often associated with war). Sometimes this ban on drums and horns is lifted for post-menopausal women. Exclusively female music is connected to initiation groups, secret societies and also some forms of recreational music. In Ghana for instance there are the adenkum and nnwonkoro groups of the Akan.

<sup>82</sup> For ancient Egyptian religion see Aldred (1961), Bates (1914), Budge (1934), Clark (1959), Diop (1962) and Wainwright (1938).

<sup>83</sup> She is often depicted as a huntress carrying a bow-and-arrow and according to R. Graves (1961) she was also a snake goddess.

<sup>84</sup> Another prominent Egyptian male god was Ra, the sun-god of Heliopolis, who was promoted to supreme god in later dynastic times when, as Ammon-Ra, he became fused with Thebe’s Ammon. However, even behind the double masculine Ammon-Ra stood the androgynous ultimate creator of the universe: Atum, the Primal Hill or Cosmic Egg. Atum mythically divided itself up to produce the first pair of celestial twins, Tefnut and her brother-husband Shu who begat the complicated Egyptian pantheon that included Ammon and Ra.

god of Thebes was the brother of the moon-goddess Mut. Set, the god of the night-sky was the husband of Nephthys<sup>85</sup> goddess of the sunset. One particularly important male deity was Thoth, the god of the moon and wisdom who was closely associated with the previously mentioned goddess of writing Seshut. The Thoth priesthood at Hermopolis invented the early form of hieroglyphic writing and established a medical school made famous by Egypt's first Prime Minister Imanhotep, whom the Greeks called Asklepios. Because Thoth was also a snake god, the emblem of the medical cult of Imanhotep/Asklepios is the Caduceus or double-entwined snake, still used by the medical profession today.<sup>86</sup>

Also important in connection with Egyptian religious sexual duality are the legendary brother and sister, Isis and Osiris, the principal characters in Egypt's most important mystery story concerning the resurrection of Osiris after his murder by his brother Set.<sup>87</sup> This legend is a version of the widespread fertility myth of the death of the god of the waning year and his rebirth as god of the waxing year. In addition, as mentioned earlier, in pre-dynastic times the Pharaoh, his human representative on earth, was actually ritually sacrificed every year.

In other parts of ancient Africa female deity included Tanit, the supreme being of the Phoenician-Berber City of Carthage.<sup>88</sup> Then there is a horned goddess portrayed on an old Saharan rock painting at Tassili. Further south another rock painting in Zimbabwe shows a mother goddess with a string of tiny men issuing from her.

In still surviving African religions there are many examples of powerful goddesses that are linked to the land, farming, the sea

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<sup>85</sup> And sister of Isis.

<sup>86</sup> Imanhotep was prime minister to Egypt's first dynastic pharaoh, Menes. It was Imanhotep who is supposed to have designed the first pyramid and his medical teachings reached Greece via the cult of Asklepios. Hippocrates, the Greek "father of medicine" belonged to this cult, which is why today the Caduceus is the emblem of the modern medical profession and newly qualified doctors have to swear an ancient Greek Hippocratic Oath.

<sup>87</sup> The legendary Osiris is dismembered by Set and is then put back together again by Isis and becomes reborn as Horus, the falcon-headed god of the sky by day.

<sup>88</sup> See Meyerowitz (1951).

and the rivers. The Akan, Mende and Yoruba earth goddesses are known as Asaase Yaa, Maa Ndoo and Oko Ayi. Ala is the Igbo goddess of the underworld. Then there is the ubiquitous pale-skinned and dark-haired West African mermaid, Mammy Water.

Occasionally in African myth the creator itself is female, as in the cases of Nana Buluku of the Fon people and Tamara of the Ijaw of the Niger Delta who call their supreme-creator "Our Mother". Similarly, amongst the Akan there is the shadowy cosmic creator Nana, whose name is derived from "ena-ena" or grandmother, although today the word has lost its feminine connotations.<sup>89</sup>

Quite often, however, the sexual balance in the supreme creator is evenly matched, as in the cases of the androgynous ancient Egyptian Atum, the Great Muntu of the Bantu-speaking peoples of Central Africa and the supreme being of the Ovambo of Namibia. Alternatively, as in the ancient religions, the sexual balance of the creator may be symbolised by divine pairs or celestial twins<sup>90</sup>: the Yoruba Oduduwa and her husband Orinshanla, Ogbor and Odiong of the Nigerian Bini people and the Ewe bisexual twin deity of Mawu the moon and Lisa the sun.

The importance of Queen Mothers and Royal Sisters as rulers, founders of states and powers behind the throne is another aspect of the age-old ritual strength of the womanly side of things in Africa. Carthage, for example, was founded in 850 BC by Queen Dido, the ancient Libyans had a woman as commander-in-chief of the army (probably one of the sources of the Amazon myth) and Egyptian pharaohs had to marry their sisters. Similarly, kingly descent in the medieval Sudanic empire

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<sup>89</sup> According to the historian Eva Meyerowitz (ibid.) even Onyame, the earliest and most important of the Akan Trinity of supreme gods that issued from the nebulous Nana, was originally a female moon deity; which subsequently became masculinised over time through Islamic and Christian influences.

<sup>90</sup> In fact, the notion of spiritual twinning is so significant in Africa that human twins take on a special mystical quality in some societies. For instance, amongst the Ga people there is a special festival for the deity believed to inhabit twins held on their birthday. Moreover, the child born after them, called Tawia, is their servant for life. Similarly, the Fon rear twins with special care as they are considered to be inhabited with spirits of the forest. Amongst the Igbo on the other hand twins were feared and killed.

of Ghana passed matrilineally through the royal sister's child, rather than the king's.

Even today, amongst the Asante, royal succession is matrilineal and is determined by the Queen Mother who is considered a genealogical expert. Customarily the East African Shilluk have a divine queen and both the Lovedu and Balobedu peoples of the Transvaal were ruled by a queen who controlled the rains, usurping the usual prerogative of the male. Likewise, amongst the Zulu of South Africa, the rain queen or Inkosazana is greater than the chief and it is she who controls the fertility of the earth. Both the Mende people of Sierra Leone and the Igbo of Eastern Nigeria have female as well as male chiefs, and amongst the latter new towns can still only be founded by women. One West African nation actually used professional women soldiers up until quite recent times. This was the Fon empire of Dahomey<sup>91</sup> whose Leopard King employed a six-thousand strong "Amazon" or "Akhosi" bodyguard complete with a fifty-strong choir.

Today, the principle of female descent persists in dozens of African societies in what anthropologists call the "matrilineal belt"<sup>92</sup> that stretches right across the continent from east to west. The case of the Asante people has already been mentioned. Amongst the Bemba-Bisa-Lamba peoples of Central Africa, the husband is literally put on probation before being allowed to take his wife and children from his in-law's home. Amongst the Yao-Chewa peoples the husband has so little power that he is never allowed to take them from the maternal home. It should be noted, however, that these are not matriarchal family systems in which women are the heads of households, as the authority over the wife and children remains with the man, but in these matrilineal cases the wife's brother rather than husband.

We can also emphasise the spiritual, political and genealogical power of women from another angle, this being the limitations imposed on some African kings and chiefs. Some

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<sup>91</sup> See Herskovits (1938).

<sup>92</sup> See for instance Schneider and Gough (1962).

sub-Saharan African kings and chiefs were sacrificed to ensure the well-being of the people, just as ancient kings had to die in pre-dynastic Egyptian and Aegean cultures too. The oldest evidence of this practice south of the Sahara is from a five thousand-year-old Southern African rock painting of a dying and ejaculating masked priest-king.

Indeed, even up to quite recently some African kings were ritually killed to maintain fertility, prevent a national disaster or simply because they became too old. Examples include the chiefs of the East African Nilotic Nuer and Dinka cattle peoples, and of the Shona and Zulu of Southern Africa. Amongst the Bambara new kings of what is now Mali had to go through an enthroning ritual that involved picking up a handful of pebbles. The number of stones he managed to hold on to corresponded to the years of his reign, after which he was ceremonially strangled. In most other cases the practice was moderated. Amongst the East African Nilotic Unyaro, royal sacrifice was turned into a re-investiture ceremony during which the king shot arrows in four directions; exactly as the pharaohs are shown doing in ancient Egyptian frescos of the Sed Festival.<sup>93</sup>

The arrival of male dominated Muslim and European cultures signalled a change to the long-standing symbolic power of women in Africa. The patrilineal system began to replace the matrilineal, the mystical and political power of goddesses and queens began to diminish, and the jealous male deity of the Judeo-Christian religions curtailed the female factor in African creation myths. The feminine side of African creator deity were therefore either, forgotten, ignored or equated by foreign missionaries with their sky-god; Jehovah, Yahweh or Allah. This also went hand-in-hand with a tendency for all local high-gods (including feminine and twin/androgynous ones) to become masculinised – which is why today Akan Christians call God “Onyame” and Ewe Christians call him “Mawu”.

This is not, however, the first time the old fertility religions have been masculinised. A similar process also occurred thousands of years ago when the male dominated religions of

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<sup>93</sup> For details on divine kingship in Africa see Seligman (1934).

the nomadic Indo-European or so-called Aryan peoples of Central Asia began, in the third millennium BC, to spread westwards in three waves: the Sanskrit speakers, who ended up in India; followed by the Medes, who settled in Mesopotamia; and finally the Celts and Achaeans who moved further west to Northern and Southern Europe respectively.<sup>94</sup>

The patriarchal Achaeans, or ancient Greeks, reached Southern Greece and the Eastern Mediterranean around 1200 BC when they had a profound effect on the pre-existing matrilineal Libyco-Aegean communities. The influential Aegean and North African goddesses were mythically demoted to minor spirits such as muses, nymphs and maenads, or were “married off” to Greek heroes and gods.

A specific example is the story of Perseus and the Gorgon. In this legend the Achaean hero Perseus slays the ugly Gorgon (Medusa), who is a witch with hair of living snakes and a gaze that turns people to stone. A clue to her real identity lies in the oldest Greek version of this story from Arcadia in which Medusa is a beautiful Libyan queen decapitated by Perseus. According to Robert Graves (1961), an expert on Greek myths, Medusa was the high priestess of the North African snake-goddess, Neith, whose ceremonies involved priestesses dancing, hissing like snakes and wearing awesome masks. In other words their legend is ancient Greek propaganda.

In very many ways the much later curbing of the traditional power of African women by Christian European colonialists is simply a replay of the old Medusa story, but this time the all-conquering Aryan “heroes” are descended from the Celtic rather than the Achaean wing of the Indo-Europeans. Despite the exclusive male orientation of white missionaries they were, however, never able to destroy the sacred power of women in

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<sup>94</sup> The earliest Sanskrit speakers were sky-god worshippers who around 2500 BC moved south-east in ox-carts to northern India, where they amalgamated their religion with that of the indigenous Indus Valley and Dravidian people; producing the Hindu religion with its male creator Brahma. A second wave, called the Medes, arrived in Mesopotamia around 1000 BC and fused their own imported Deiwas deity with the local Ahura ones to create the Zoroastrian religion. A third group moved into Europe in a succession of Celtic invasions of Northern Europe (the Beaker Folk, Belgics, Teutons and Brythons) whilst others took a more southerly course into Greece and the Eastern Mediterranean.

Africa, as they had done in their own countries with the persecution of so-called pagan “witches”.<sup>95</sup>

One of the earliest documented examples of the feminine resistance to European colonialism in Africa was the seventeenth century Angolan Princess Nzinga who successfully fought the Portuguese and forced them into a treaty. In the eighteenth-century matrilineal kingdom of Kongo, the prophetess Kimpa Vita (or Donna Beatrice) created her own Antonian church, which believed in a black Christ and the restoration of the Kongo kingdom from Portuguese rule. Reminiscent of France’s Joan of Arc, Donna Beatrice was burnt at the stake by the Catholic authorities.<sup>96</sup> Likewise, the nineteenth-century Southern African Xhosa and Shona prophetesses Nungquase and Mbuya Nehanda preached that the whites would disappear on a day of reckoning, whilst the very last war against the British in 1901 by the Asante people was led by their Queen Mother, Yaa Asantewaa. In the century that followed, and much to the chagrin of orthodox Christians, even a few of Africa’s separatist Christian churches have been founded and run by priestesses and prophetesses. Just one notable example is Alice Lenshina’s Lumpa Church of Zambia.

African women not only retain genealogical and ceremonial power, they also have considerable economic influence. As mentioned previously they carry out most of the agricultural work. Moreover, the so-called “market-mammies” and the mutual-aid trading associations they have set up control many markets in Africa. It is their mammy wagons (modified trucks) that have played such an important part in Africa’s private transport system. Indeed, trading is such an important womanly occupation that when a man marries he is expected to provide the initial cash to establish his wife or wives as traders. Within the traditional African family set-up, wives become independent earners and are expected to help the husband financially to support their children. This is quite different from the situation

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<sup>95</sup> Witches were in fact herbalists, midwives and the last priestesses of ancient European fertility religions and goat cults. See for instance J. Murray (1921).

<sup>96</sup> See M. Martin (1975).



in the West and in Muslim countries where wives are traditionally economically dependent on their husband – which is why the wife's family has to pay the man's family a dowry to take her off their hands. In the bride-price system of Africa, women are considered an economic asset, so it works in the reverse way.

A specific example of the economic power of African women is the Aba Riots that took place against the British in Eastern Nigeria during the late 1920's. At first the protests against the planned colonial census of women for taxation purposes were low-level and were known as the "dancing women" movement. However, in 1929 full-scale rioting broke out, when ten thousand women belonging to their Mikiri farmers/traders association and wearing only palm-leaves abused and danced around British installed "warrant chiefs" and "native" administrators. They made eighteen such attacks during which fifty women were shot dead before the troubles stopped, for the women had felt themselves protected from bullets by their goddess Oha Ndi Nyiom, the Spirit of Womanhood. A similar anti-tax struggle took place in the Yoruba town of Abeokuta in the 1940's when Mrs. Funmilayo Ransome-Kuti (the mother of Afro-Beat musician Fela Anikulapo-Kuti) led thousands of market-women against the local British supported chief, who was consequently dethroned.

### *Conclusion*

Oppositional rhythms echo the positive and negative poles of mythical order as expressed in such motifs as the antagonistic divine twins and the spirits of the waxing and waning year. There are also metaphors based on sexual balance such as the sacred marriage of firm father time and yielding mother earth; and the socio-ritual importance of women expressed through dual arrangements of matrilineal and patrilineal inheritance, important female as well as male associations and powerful queens as well as kings.

## Theme Two: Relativity – Polytheism, Polycalenders and Multiple Souls

Just as African rhythm is composed of multiple sound vibrations so too is the African cosmos a relativistic profusion of spiritual forces which constitute, inhabit and interact with the earth, the heavens and all living creatures.

For example, the running of the universe is in the hands of numerous specialised demigods or demiurges that mediate between mankind and the supreme being. As noted above they often exist in pairs who control polarised domains such as the masculine heavens and feminine earth. Indeed, this spiritual pluralism even applies in many African societies to individual human beings who are thought to be composed of multiple souls. Let us turn to this religious “polytheism”<sup>97</sup> and pluralism in some detail.

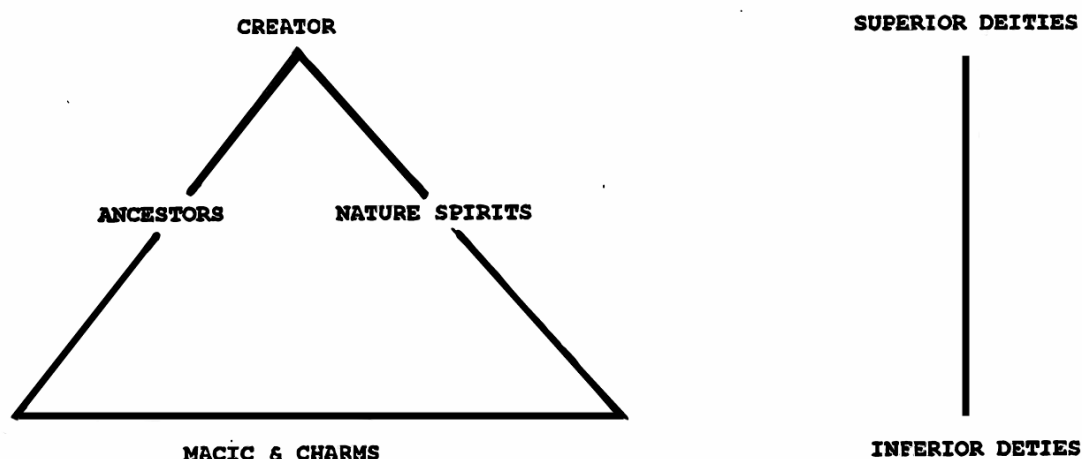
### *Polytheism*

Just as the African Beat is made up of a number of sub-rhythms so too do African polytheistic faiths consist of pantheons of demigods. These spiritual intermediaries, with their varying degrees of power, allow mankind to contact the divine in three main ways: through ancestors, through magic and through nature spirits. This tripartite arrangement is illustrated below.<sup>98</sup>

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<sup>97</sup> Some African writers on religion, such as Opoku (1978), argue that polytheism implies a number of equal powered gods. Therefore, African religions, in spite of their pantheons of demigods, are not fully polytheistic as these lesser deities are under the control of a supreme creator. Nevertheless, and taking this reservation into account, I will continue to use the word “polytheism” for African spirituality multiplicity.

<sup>98</sup> For an introduction to African religions see Ade-Adegbola (1983), Booth (1977), Danquah (1968), Mbiti (1969), Opoku (1978) and Parrinder (1967, 1969).



*Figure 30: African spiritual intermediaries*

As can be seen, ancestor worship is one cornerstone of African traditional religion. The dead act as spiritual lobbyists for their living kin and the older the ancestor the more supernatural weight he or she carries. At the top of the ancestral list and nearest to the supreme being is the founding hero or heroine of a family or clan. This belief in spiritual seniority also helps explain why there is so much respect for the old in Africa, for they are closer to the ancestors than the young. Furthermore, it also accounts for the age-old custom of burying their dead in the family house to provide a benign mystical protection.

More specialised African supernatural agencies are charms and herbs which are thought to have magical properties of varying degrees of power, or are endowed with them by the traditional priesthood. These have very specific applications. One such is protection against witchcraft, which is why it is erroneous to call these priests and priestesses “witch-doctors” when they are really “anti-witch doctors”. Mystical charms can also be used in a more mundane fashion: to cure sickness, for sexual enhancement, as a safeguard against accidents and for economic success. Magic therefore furnishes a traditional way of actively manipulating the surroundings for definite purposes, which may be good or evil depending on the intent of the person involved.

The third cornerstone of this tripartite African belief system is the worship of numerous nature spirits. Despite a considerable overlap these can be separated into three groups. There are localised spirits connected with geographical and ecological features such as mountains, seas, rivers, lagoons, rocks, caves and vegetation. Secondly there are those associated with the natural forces of the wind, thunder and rain, or linked to the heavenly bodies. Finally, and important in all fertility religions, there are the spirits incarnate in wild and domestic animals. This is why many African clans have special holy totemic animals which are emblems of group unity and which it is normally taboo to kill. For example sacred “akyeneboa” animals such as the falcon, buffalo and leopard designate each of the eight Asante clans. In addition, up to this day the Fante people of the Southern Ghanaian town of Winneba hunt and eat their sacred deer during their annual Akwanbo Festival when the normal taboos are relaxed.

If we go back in time to the first evidence of hallowed creatures in Africa we come to the Saharan rock artists of ten thousand years ago. They painted images of wild beasts, which they hunted but revered. Later Saharan rock paintings of the early pastoralists show other animals such as snakes, two-headed cows and ram-heads with solar discs between their horns. The last mentioned is also the symbol of the ancient Egyptian sun god Ammon, the chief deity at Thebes (modern Luxor) who also had a major shrine at the Silwa oasis in ancient Libya. In fact the sacred ram was known throughout ancient North Africa and the name Ammon still appears in some present-day West African societies. Amongst the Jukun and Dogon the ram is associated with the sun and sky, whilst royal rams are found amongst the Hausa, Yoruba, Mandinka and also on bronze engravings in the thousand year old grave at Igbo-Ukwu in Eastern Nigeria. The Asante people of Ghana sometimes call their supreme sky-god Onyankopon “Akragya-Ammon” which is incarnate in a white

ram, and in their Adinkra cloth designs<sup>99</sup> the ram's head "Dwennimmen" signifies strength and hardiness.



*Figure 31: The ram's head stamp design of the Asante of Ghana*

### ***Multiple Souls***

Another aspect of African spiritual multiplicity lies in the notions of what makes up a human being. Besides the physical body, many African beliefs include an array of spiritual components. Some of these multiple shadow or bush souls<sup>100</sup> are discussed below.

The ancient Egyptians believed spirit consisted of three qualities: the person's Ka or spiritual double, their Ba or individual soul and their Ku or intelligence. Likewise, the Ila of Zambia and other Bantu-speaking peoples of central and Southern Africa consider that humans consist of three souls.<sup>101</sup> These comprise an unconscious "life soul" inherited from the mother, a conscious "individual soul" inherited from the father and a "transcendental soul" given directly by the supreme deity.

According to Meyer Fortes (1959) the Tallensi of Northern Ghana believe in two souls that are related to a person's body (segr) and potentiality (nuor yin), and a third one that is a composite guardian angel composed of some important ancestors. Amongst the Ga of coastal Ghana human spirit is

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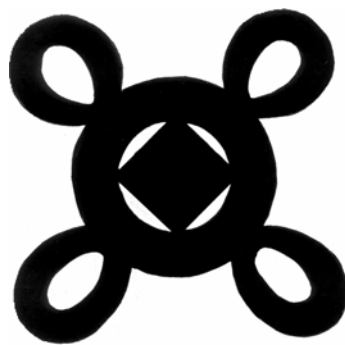
<sup>99</sup> The Akan have about sixty of these designs that they stamp onto their traditional local cloth using wooden stampers and strong local black dye. For illustrations of these designs see Rattray (1927), Danquah (1968) and Quarcoo (1994).

<sup>100</sup> This notion is, according to Mircea Eliade (1954), also found in Asiatic Shamanism.

<sup>101</sup> See Evan Zuesse (1979) and Placide Temples (1969).

thought to consist of the Sunsuma (Shadow) or mortal character, the Kla or immortal soul and one's own personal fate known as Gbeshi.<sup>102</sup>

For the neighbouring Akan there are four spiritual components. Sunsum is one's mortal character<sup>103</sup> and the Okra (or Kra) is the immortal soul, which carries one's personal destiny or Nkrabea. Then there is the Ntoro spirit that is inherited from the father and protects the individual up to the age of puberty. Fourthly there is Mogya (blood) which is inherited matrilineally and which returns to "mother nature" at death. Sunsum appears as one of the stamped Adinkra cloth pattern. It is made up of four small circles surrounding a larger central one; possibly representing the four components of the total psyche in Akan belief.



*Figure 32: Sunsum – the Akan emblem of spirituality*

The Fon of the Benin Republic also believe that they have four sides to their spiritual make-up or "Se" as they call it. First is the indestructible "Ye" (Shadow) that on death of an individual returns as a guardian spirit "Djote" for its descendents, with aspects of it being reincarnated in them.<sup>104</sup> The second Selido or personal soul peculiar to each person is particularly identified with the voice. Thirdly there is the Semido or "Mawu (i.e.

<sup>102</sup> See for instance Margaret Field (1937).

<sup>103</sup> Sunsum is the personal aspect of the universal spirit according to the Ghanaian writers Abraham (1962), Danquah (1968), Gyekye (1987), Wiredu (1980) and Ajei (2000).

<sup>104</sup> Unlike eastern reincarnation that involves the transmigration of whole soul's it is only aspects of the "Ye" that are transferred to a descendent, in away akin to genetic transmission

supreme being) in the body” which expresses itself as intellect. Finally, there is the Sekpoli, a soul acquired in later life through initiation, divination and esoteric knowledge.<sup>105</sup>

### *Polycyclic Calendars*

Besides multiple souls many African and other pre-industrial societies simultaneously use multiple calendrical systems. These combine various cycles based on agricultural seasons and the movement of animals and fish, a solar calendar cued by the position of the sun and stars, and a lunar one based on the phases of the moon. As will be discussed later, in ancient Egypt there was yet another calendar, the secret Sothic one based on the star Sirius and the flooding of the Nile.

The Akan of Ghana use a combined system of reckoning based on seven personal day-names and six special day-attributes.<sup>106</sup> When these seven and six-day cycles are multiplied they produce a forty-two day cycle called an “Adaduanan”, celebrated at its close by either a “Little” or “Big Adae”, depending on whether that day is a Wednesday or Sunday. Nine, or strictly eight, of these forty-two Adaduanan comprise an Akan year. However the eighth Adaduanan has to be lengthened each year around the beginning of the annual Odwira yam festival to adjust the whole arrangement to the 365-day solar year. This festival initiates the ninth Adae which is simultaneously the beginning of the new Akan year.

Incidentally, the Indonesians have a polycyclic calendar (and indeed polyrhythmic “gamelan” music)<sup>107</sup> that parallels the Akan one in many ways, as in addition to a solar and a lunar calendar, these Asian people also have one based on a five and six day-names. These multiply up to a thirty-day month, at the end of which there is a minor celebration equivalent to the Akan Adae festivals. Seven of these traditional Indonesian months make up a grand two-hundred-and-ten day cycle, after which the major

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<sup>105</sup> For Dahomey see Argyle (1966) and Herskovits (1938).

<sup>106</sup> It was my father, the late E.F. Collins of the Department of Philosophy at the University of Ghana, who first told me of this.

<sup>107</sup> For details of this Javanese and Balinese polycyclic calendar, and polyrhythmic Gamelan gong and metal xylophone music see J. and A. Becker (1981).

Galungan festival is held: equivalent to the Akan Odwira festival.

### *Polysided Life*

As must be obvious by now, relativism and pluralism permeates many aspects of traditional African life which encourages an equitable distribution of symbolic or social weight. Things must come and be done in multiples. No single rhythm, deity or time-scale should steal the show.

African music is polyphonal, their religions are polytheistic, their calendars polycyclic, their plastic arts polyangled and, as will be discussed later, their social organisation polycentric. This polysided African view even applies to their traditional domestic life. Marriage is customarily polygamous<sup>108</sup> whilst African homes are compound-houses composed of collection of huts and households that face inwards around a central communal courtyard. In this type of dwelling there may be forty or more members of the extended family and their various in-laws. The responsibility for looking after the children is therefore spread thin and the child is exposed to many life models and points of view.<sup>109</sup> Moreover, the co-habitation of three generations (i.e. grand-parents, parents and grand-children) provides continuity between the young and old; expressed in the common custom of naming a grandchild after its grandparent. In old Africa there was no shunting of the aged into special homes and dormitory towns for senior citizens. This African overlapping of three generations is the cement or glue that helped hold things together and kept the wisdom of old-age within the African family.

Africans are also usually polyglot as it is quite common in a continent of over two thousand languages for an African to speak three, four or five different ones, providing multiple linguistic frames-of-reference and cultures rich in puns. Indeed the mythical trickster and patron of Afa divination, Legba or

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<sup>108</sup> The more technically correct term for one man marrying several wives is "polygynous".

<sup>109</sup> For examples of work on the family system see Mair (1969) and Kaye (1962).



Eshu, is supposed to speak 256 languages. In addition, the claim of the Vodun shrine at Bume in is that all those who join “learn to speak a hundred languages at once”.

### *Conclusion*

The relativity of African music mirrors the broader African metaphysic. Diverse time scales are compounded together in music and calendrical systems. Multiple rhythms reflect and are reflected in polytheistic religions, constellated souls and compound calendars. Just as no single rhythm is allowed to dominate the African Beat, so too no single deity, soul or time-scale is allowed to hog all the limelight of the African ritual cosmos.

### Theme Three: Hidden Space – Cosmic and Ritual Swing

African rhythmic formulas are punctuated with rhythmic gaps and spaces. Likewise, the rules and regulations of African socio-ritual protocol are broken up by licentious intervals, whilst cosmological structures have shadowy origins, invisible axes and offbeat trickster deity. As will be discussed below, it is these ambivalent loopholes in both mythic and ceremonial order that helps provide them, like music, with “swing”.

In African, as in many old polytheistic religions, the universe is thought to have originated from a formless ground known by such names as the Abyss, Void or Primal Waters. It is from this undifferentiated matter and energy that the creator first emerges, polarising and re-polarising into a cascading pattern of elemental deity and forces that constitute the manifest universe: before quietly disappearing behind the scenes.

In ancient Egypt there was the Primal Hill or cosmic egg, Atum, who emerges from the chaotic Waters of the Deep (Nun) and retires after producing the Egyptian pantheon. Similarly, the ancient Greek mystery religions speak of an obscure Phanes, who withdrew from active life after creating the lesser gods. Likewise, Indian Hindus believe that within the active material universe of Karma there is Sunyata, or the Living Void – not absolute emptiness but rather a nascent plenitude from which actuality is born. To quote the Hindu Heart Sutra or prayer, “form is emptiness and emptiness form”.

At a lower level of the polytheistic hierarchy are double-sided deities that exhibit both destructive and constructive characteristics. These are the mischievous trickster spirits and cosmic buffoons who are simultaneously benevolent and malevolent. They are often the messengers of the gods who flit between the heavenly upbeat and earthly downbeat bringing wisdom and oracular knowledge to mankind. Nonetheless, heavenly news, like any other, can be of good or bad tidings. This is why in so many of the old religions these couriers who straddle the sacred and secular divide are impish and feared beings; as in the case of the Egyptian Thoth, the Greek Hermes, the Roman Mercury and the Nordic Loki. Sometimes this

mischievous mythical creature is associated with the celestial serpent that separates cosmic order from the Abyss.

Whereas the polytheistic trickster remains a mixture of good and evil, in the monotheistic Judaeo-Christian religion this contrary deity has become changed from dangerous emissary of divine information to an embodiment of pure satanic evil. This demonisation happened to both Lucifer who was transformed from "light-bringer" to fallen angel, and to the wicked serpent in the Garden of Eden that originated sin by enticing Adam and Eve to eat the forbidden Fruit of Knowledge.

Whereas the inflexible Judaeo-Christian God harshly treats any transgressions of his divine plan, pagan tricksters fly between the symmetrical compartments of holy order: heavens and earth, good and evil, sacred and profane, form and chaos. By so doing they stir up the clear divisions and domains of an otherwise over-rigid cosmos.

Flexibility and swing is not only a part of the mythical order of African traditional societies but also their ritual arrangements, which are periodically interrupted by ceremonies in which the normal rules and taboos are broken. This occurs during times of transition and transformation, such as initiation rites, seasonal festivals and dynastic changes. During these intervals of "ritual reversal" the usual compartments of social and sacred order are purposely mixed-up or "polluted".<sup>110</sup> Organised society is thereby symbolically put back in touch with mythic chaos, which provides bedrock from which to start afresh. This temporary de-structuring of things therefore gives society a breathing space and paradoxically helps the community move from one ordered phase to another.

A very ancient example of this ritual reversal already referred to is the immolation of honoured priest-kings at the close of the agricultural year, re-told in fertility myths such as the Egyptian one of Isis and Osiris. Others are the old Graeco-Roman festivals of regeneration such as Saturnalia and the Dionysian (Bacchic) Rites. During these sacred festivities all sorts of upside-down and

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<sup>110</sup> Chiefs can be criticised, children are allowed to steal, men dress as women, women make advances to men, sacred animals are killed and eaten.

offbeat behaviour were encouraged: like divine frenzy, possession, drunkenness, orgies, transvestism, play-acting, animal sacrifices. Rites of reversal even survived into old Europe. One was the medieval Catholic Feast-of-Fools day which, held every January, permitted mild sacrilege and got bishops and alter-boys to switch roles. Another was the “crossing the line” (i.e. equator) ceremony onboard old sailing ship, when the role of captain and cabin boy was reversed.<sup>111</sup>

Let us now turn to the African side of cosmological and ritual swing in more detail, focusing on three particular areas: namely the belief in a hidden or understated creator, the occurrence of equivocal tricksters and, thirdly, the incorporation of episodes of ritual disorder into African ceremonial order.

### *Africa's Laid-Back Creator*

In Chapter One we noted that African master-musicians tend to understate rather than overstate their presence in an ensemble: rather than hogging all the limelight they orchestrate a community of rhythms. This laid-back aesthetic is also found in some African belief systems concerning the nature of their high-god, who is an invisible presence that hides before or behind the everyday world of demigods and mortals.

In ancient Egypt the negative and shadowy side of existence presented itself in their spiritual beliefs concerning the origin of the universe. We noted above that it was from the chaotic and undifferentiated Waters-of-the-Deep that the supreme being, Atum, emerged. This first form was bounded by the heavenly serpent Sito, (whom the Greeks called Python), that prevented Atum from dissolving back into primeval formlessness. In the genesis story of the Egyptian temple of Hermopolis this negative aspect of creation was taken even further. The myth starts with the usual Primal Waters or Abyss, but instead of creating the Cosmic Egg or Primal Hill, Atum, the Abyss first produces four negativities: Nothingness, Inertness, Infinity and Darkness. Each

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<sup>111</sup> Onboard activities on that day also include feasting, fancy dress and the appearance of Neptune and his wife. Even today remnants of these old ritual reversal practices remain in the trickery and license of April Fools Day, Halloween and Christmas and New Year festivities.

of these four negatives has a male and female quality known collectively as the Eight Shmunu, which in turn generate the supreme being Atum: who as mentioned earlier retires from active service after begetting the Egyptian pantheon.

Like Atum, the supreme deity of sub-Saharan Africa are also obscure and diffuse entities that leave cosmic and earthly arrangements in the hands of specialised deity or demiurges. For example, Nana Buluku of the Fon first forms the divine pair Mawu and Lisa and promptly departs – Mawu itself being a deity that, according to Melville Herskovits “guides with silent promptings<sup>112</sup>.” The high-god of the Southern African Ila and Ndembu likewise retires from the world after creating space, time and the demigods. Similarly, behind the traditional Akan trinity of Onyame, Odomankoma and Onyankopon stands a higher nebulous divinity known as Nana.<sup>113</sup> Again, the Great Muntu (or Mwine) of Bantu-speaking peoples is a vague supreme being who is distant from a world looked after by the god Bwandi.<sup>114</sup> And standing at the back of the main Yoruba deity is the higher being, Olodumare, who breathes life into everything. To borrow a word used by the famous English anthropologist Evans-Pritchard, the African gods and goddesses are all “refractions” of a laid-back ultimate creator.

Because the African creator deity is not directly involved in daily life there are usually no shrines, feast-days and priesthood dedicated to it. As the Akan say, “if you want to speak to the creator, tell it to the wind.” Instead, contact with the supreme being has to be carried out through the network of intermediary spirits and deity that do have priests, shrines and sacred objects consecrated to them. It was this very profusion of shrines and images that led the first European missionaries to call Africans idolatrous “fetish” worshippers, since they were unprepared for the low-profile African creator, as compared to their own high profile, authoritarian and jealous Judaeo-Christian one.

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<sup>112</sup> See 1938.

<sup>113</sup> See Meyerowitz (1951).

<sup>114</sup> See Jahn (1961).

This difference does not end here, as can be illustrated with the Mbuti pygmy myth of the separation of man and god. The creator for these Central African people, like the supreme being of so many African societies, retires skywards and leaves earthly order in the hands of spiritual monitors. It is mankind's folly that triggers the disappearance of the supreme being by disrupting the primal forest (the pygmy Eden). This typically African myth of man's separation from the supreme god is completely the reverse of the Christian one. Whereas the African creator rises up and away, the biblical myth refers to mankind's fall from grace. Thus the African high-god leaves mankind bereft whereas the Judaeo-Christian one puts mankind into a permanent state of sin.

As a final example of a hidden African creator, the traditional religions of Gabon, Cameroon and Mali, like the ancient Egyptians, all see the material universe emerging from nothingness via a cosmic egg.

Amongst the Fang of Gabon and the Beti-Bulu-Fang of neighbouring Cameroon, there is a form of epic poetry accompanied by a traditional harp-zither (called "mvet"). Only full initiates into Fang cosmological knowledge can play the highest-ranking type of this epic, known as *Bebome*. Simplistic versions of this sung Fang creation-myth were recorded almost a century ago on cylindrical record by the German Günther Tessmann for the *Völkerkunde-Museum* in Berlin<sup>115</sup>. More recently the full genesis story of the Fang was revealed between 1970 and 1993 in the successive writings of the mvet bard Tsina Ndoutoume<sup>116</sup>.

Ndoutoume writes that according to these creation songs the universe's beginning was the Fang creative principle *Eyo*, surrounded by nothingness. *Eyo* then decided to create time, space and matter from a tiny cosmic or lightning egg called *Aki Ngoss Eyo*. However intelligence became trapped inside its thick shell. Therefore *Eyo* heated the egg to incandescence so that it

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<sup>115</sup> These recordings were amongst those that formed the basis of E.M. von Hornbostel's psychological speculations on African music concerning the acoustic and motor components of African drumming discussed in Chapter One.

<sup>116</sup> See Skrydstrup (2000).

enlarged and finally exploded to release knowledge: and also from its bits of shell the sun, stars, nebulae, milky way and the earth with its plants and animals. Nobody knows where Aki Ngoss Eyo exploded and nobody knows where its beginning and end are situated.

The Dogon, Bambara and Bozo peoples of the Upper Niger Bend in modern day Mali also have a similar cosmic egg story of the universe being created out of nothing. All these three ethnic groups place great emphasis in their genesis story on the Sirius star; which Robert Temple<sup>117</sup> suggests, results from the influence of ancient Egypt and its Sothic (i.e. Sirius star) calendar. The Dogon call this star Sigui Tolo. The French anthropologists Professors Griaule and Dieterlen, with the permission of the Dogon elders or Hogons, finally made their secret cosmology (dating back to the twelfth century AD) public. At first they were just given a series of simplified versions of creation used for Dogon children. Only later were the two researchers initiated into the full esoteric knowledge of the Dogon. This again helps explain why so many of the first European visitors to Africa called its religions primitive; for being newcomers they were only given the unsophisticated children's view of things.

In the full Dogon cosmological picture everything centres on Sirius, or rather an invisible companion star that orbits it every fifty years and which is composed of a super dense material called Sagala. The Dogon call this dark hub of the revolving universe Po Tolo and equate it with their supreme creator, Amma. The Bambara call this central cosmic void "Yo", something that "comes from itself, is known to itself, and departs out of itself, from the nothingness that is itself". The Dogon initiates are told that at the beginning of time Amma, as Po Tolo, was an infinitely tiny Egg-of-the-World. This formless and concentrated mass of divine energy then separated out into eight vibrations, each of which immediately splits into male and female; creating eight bi-polar forces the Dogon call the Twin

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<sup>117</sup> Robert Temple's *Sirius Mystery* book was written in the 1970's and although making some fanciful connections between ancient Egypt knowledge and aliens from space, it does provide a useful overview of Dogon cosmology. For a more detailed look at Dogon beliefs see Griaule (1965).

Placentas or Nommos. The vibrational energy of these nascent forces exploded and scattered the twin placentas into space, where each enlarged into the eight twin spiritual guardians of the universe. They in turn divided and re-divided into the 256 cosmic elements of the Dogon. One of the Nommos however rebelled and tore-off one half of its Twin Placenta, transforming itself into lopsided Yuruga, the Pale Fox trickster and architect of our own particular world.

This reference to the Dogon Yoruga brings us to the topic of African trickster spirits in general, whose very misconduct and ambiguity provides creative possibilities and variations to the strictly regulated metaphysical order of African belief systems.

### *Africa's Offbeat Trickster Deity*

The African trickster that flits between the heavenly upbeat and earthly downbeat is found in many guises. In ancient Egypt it was the moon and snake god, Thoth, who was also the messenger of the gods. The people of modern-day Gabon call the celestial bringer of good and bad tidings Eserengilia, whilst amongst the Fon this oracular deity is known as Legba. For the Akan the trickster is the web-spinning Kwaku or Kweku Ananse, the clever and mischievous spider-hero who has even found his way to the Americas in Black Caribbean "Nancy stories".

The Tiv of Nigeria have their rabbit trickster Alom and similarly the Bantu-speaking peoples have their prankster-hare that was transmuted into the Bre'r Rabbit character of African American folklore. The Yoruba call their trickster, Eshu, who is the spokesman of the gods and is associated with their system of divination known as Ifa. His animal form is the tortoise and he is found as Exo in the black Brazilian state of Bahia.

Amongst the Dogon it is the asymmetrical Yuruga or Pale Fox trickster who introduces disharmony into creation, but in so doing produces our own world. Yuruga resembles the Greek Prometheus who steals the knowledge of fire from the gods and brings it to earth, disturbing the rigid perfection of the divine plan. A similar destabilising spiritual force is also found in the Yoruba god Ogun, who brings knowledge of smelting iron to mankind. However, as iron implements can be used for good



and evil, the Promethean Ogun is not only the god of scientific creativity but also of war and destruction. His double-edged character is expressed in the Yoruba legend of how the trickster Eshu got Ogun so drunk on palm-wine that he slaughtered his followers as well as his enemies.<sup>118</sup>

Yet another ambivalent agency in Africa that operates at a lower level of the spiritual hierarchy are dwarfs. One such case are the *mmoatia* of the Akan, thought to be small, reddish-complexioned folk who hide away in the bush and may either help or hinder people. On one hand they are believed to kidnap children and create mischief. On the other, many traditional doctors claim that they are taught their herbal knowledge and healing craft from these magical tiny folk.

Whether big or small, mischievous or downright anti-authoritarian, these ambivalent and offbeat tricksters span the heavens and earth and bring knowledge, oracular wisdom and creativity to humankind.

### ***Ritual Intervals in Africa***

As noted above, generative "swing" comes from the chaos, ambiguities and other offbeats within African cosmic plans. These creative cracks also occur in African ceremonial structures as well.

Particularly important are the intervals of ritual license and reverse behaviour that mark transitional junctures in both individual and social life. According to the anthropologist Arnold van Gennep the ceremonial breaking of taboo creates a limbo or liminal phase when ordered life is temporarily converted into unstructured and mythical primal time. Victor Turner, a researcher in East Africa, calls this liminal phase "anti-structure."<sup>119</sup> Thereafter, new arrangements and social structures can begin afresh. At this point let me provide some specific

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<sup>118</sup> For instance see Soyinka (1976) on Yoruba myth and its comparison with Greek myth. It was also the trickster Eshu who got the Yoruba god of creativity, Obatala or Orisha-nla, drunk on palm-wine. So when Obatala (deputy to the supreme being Olodumare) fashioned the earth out of clay his hands occasionally slipped, thus unintentionally producing children who are born deaf, blind, albino and cripple.

<sup>119</sup> For van Gennep see 1938 and for Turner see 1967 and 1982.

examples of these breaks in socio-ritual order, turning first to the rites-of-passage that signify critical changes in a person's life.

The puberty initiation rites of the matrilineal Ndembu people of Zambia involve young girls being isolated from society and purposely disorientated by older women. In a number of ways they are systematically cut off from the secure world of childhood whilst at the same time they are taught their new roles as women. When they emerge into the community again they are immediately ready to take up their new adult status. Another example is the initiation of boys amongst the Mende of Sierra Leone when ritual reversal is used as a psychological de-structuring technique.<sup>120</sup> The youths are taken away from the safety of their homes to the bush where they are scarified. The marks signify that they have been eaten and swallowed up in the womb of the Poro, or guardian of the secret society, brought vividly to life by the frightening figure of the Gbeni masquerader. Later, after undergoing training and hardships the boys are symbolically re-born as men whilst the Gbeni figure, ironically performed by a man, groans and behaves like a woman in labour.

Another rite-of-passage that sometimes involves odd conduct is the Rite-of-Separation between the living and the dead that occurs during some traditional African funerals. During Zulu funerals women wear their clothes inside out, the corpse of the deceased is carried backwards into a room to be laid in state, whilst mourners enter the hut backwards. In some African societies the corpse is actually insulted to ensure that the soul joins the ancestors and does not remain in this world as a ghost.

Rites-of-reversal also take place in many of the seasonal and agricultural ceremonies, when topsy-turvy behaviour are allowed and even encouraged. The Swazi king was temporarily divested of all royal trappings during the Incwada ceremony that took place when the season's first fruits were picked. The Ila of Zambia celebrates New Year with gifts being exchanged for insults, with women singing obscene songs and with theft and adultery being temporarily permissible. Amongst the Fante of

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<sup>120</sup> In modern parlance this might be called "brain washing".

Winneba, the “Lord of Misrule Festival” at the end of the annual deer hunt is marked by a similar period of social licence. For the neighbouring Ga people, the Homowo (Hooting at Hunger) festival also involves this kind of behaviour.<sup>121</sup> On the morning of this annual jubilee children are allowed to steal from market stalls, women are publicly permitted to make advances to men and there are fancy-dress processions that involve sexual horseplay. Sexual norms are likewise temporarily cast aside during the Ekokomea ceremony of the Mbuti pygmies in Zaire and New Year Bugim Chugu or “Fire Festival” of the Dagomba of Northern Ghana<sup>122</sup> when there is transvestism, unruly dancing and dare-devilry.

A final example of Rites-of-Reversal is the ones that traditionally took place in Africa during periods of political succession, when the old order was giving way to the new. During this transition there were often anarchic interregnums when old scores were settled and anomalous behaviour tolerated. At its most extreme this could involve the ritual murder of the old king. In other cases, for instance amongst the Yoruba, the new king would be kidnapped and treated severely before receiving the honours normally associated with kingship.<sup>123</sup>

### *Conclusion*

African social, ceremonial and spiritual patterns, like syncopated musical ones, are full of offbeat intervals, breaks and hidden spaces. These are the licentious loop-holes and ceremonial “anti-structure” that punctuate the phases of socio-ritual change, the disorderly interregnums that fill out the body politic, ambiguous tricksters who span the heavens and earth, and mythical figures acting against a back-drop of a taciturn creator.

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<sup>121</sup> See Margaret Field (1937).

<sup>122</sup> For Dagomba ceremony see Neeley (1995).

<sup>123</sup> Examples of such types of African political succession and change are provided by Fortes and Evans-Pritchard (1940).

Besides supplying spacing and background for organised social and metaphysical patterns intervals and understatements also provide internal structural give or "swing". As we have seen this interior play is symbolised in a number of ways: laid-back high-gods, unruly tricksters who counteract the divine plan, the chaotic ground of many creation myths, and the taboo-breaking ceremonies and liminal loopholes that mark out transitional stages.

It is these breaks, syncopations and hidden spaces that help provide flexibility and renewal to the religious and communal order of traditional African societies.

## Theme Four: Holism – The Animating Universal Spirit and Eternal Now

The tensions of on/offbeats, call-and-responses and the cross-rhythms of African music cohere together into the polyvalent Beat that seems to defy and suspend time. Similarly, underlying the spiritual polarities and pluralities of polytheistic faiths there is the ideal of cosmic togetherness and a ritual community. There are various ways of symbolising this: as divine marriages, families and genealogies, or as the clan totem and legendary founding figures. Another holistic notion is that of the “eternal now”<sup>124</sup> which often appears in Africa as timeless unifying spiritual energy that “animates” the universe: and it is to this topic that we now turn.

### *The Universal Spirit*

As noted previously, in many polytheistic creation myths elemental figures and forms are believed to crystallise out of a primal undifferentiated energy: such as the Void, Abyss, Waters-of-the-Deep or Cosmic Seed. Sometimes this notion of a primal ground was expressed musically. Old China used the metaphor of “huang chung” or “yellow bell”, the universal sound from which springs all the twelve lesser tones that make up the world. The Hindus call this fundamental sound “Om”. Moreover, they believe that this primal energy not only exists before time, but also is also ever-present as a timeless vital spirit existing in the “eternal now”. The Chinese call this Ch’i, the Hindus Prana and the ancient Greeks Pneuma or “breath”.

In Africa this idea of an archetypal power that energises and connects all matter comes in many guises. The ancient Egyptians called this god-given essence “Ka”, which they believed existed in the human body as a creative spiritual double or genius (which could be reincarnated). For Bantu-speaking peoples of central and Southern Africa there is the animist notion of Ntu, a cosmic force that is continually trying to burst out of and

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<sup>124</sup> This expression and the one “eternal return” are two expressions used by the anthropologist Mircea Eliade to describe the time concept in pre-industrial societies in the 1954 book *The Myth of the Eternal Return*.

animate matter. According to Janheinz Jahn (1961), Ntu is the prime state from which are derived all others: the physical world of space and time (Hantu), intelligence (Kintu), values (Muntu) and even the supreme being or Great Muntu. Indeed, the word Bantu itself literally means plural Ntu. In West African Dogon belief there is an imperishable universal force, Nyama, of which an individual's Kikinu soul (or more accurately, conjunction of several souls) is a part. The Igbo of Nigeria have their great spirit Chukwu who lies behind the world of opposites,<sup>125</sup> whilst for the Fon there is Da an impersonal divine dynamic power symbolised by the rainbow.

Sunsum is the Akan word for the universal spirit that emanates from the supreme being. This is, at the same time, both a hidden and timeless unifying force and a vitalising principle for particular objects. For instance, and as discussed earlier, it is one of the components of a person's soul related to personality or character. The Akan poetically express the universal spirit as Honhom, derived from "ehon ehon" or "pith of the pith". Furthermore they depict the timeless nature of this spirit in one of their Adinkra patterns. The design is known as Nyame Nwu Na Mawu, which means "if God does not die so I cannot die".<sup>126</sup>



*Figure 33: The Akan Symbol of the Perpetual Spirit of God*

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<sup>125</sup> See for instance Idowu.

<sup>126</sup> See Quarcoo (1994).

### *The Eternal Now and Accumulated and Spatial Time*

It has often been remarked by social scientists that traditional African and other pre-industrial societies had and have a different concept of time than the European one of the straight-line march of history. Two explanations for this old non-linear notion of time are firstly the belief in a divine "eternal now" and secondly, as will be discussed in the next theme, the notion that worldly and heavenly life moves in constantly re-incarnating cycles.<sup>127</sup>

The linguist Benjamin Lee Whorf<sup>128</sup> many years ago brought to notice an example of this eternal or "timeless" time in the case of the Hopi Native Americans who have no tenses indicating past, present and future. They rather have a concept of "accumulated time"; something that is built up and not used up, something that increases and is not spent. The pioneering anthropologists Bronislaw Malinowski and Margaret Mead noted that the Trobriand Islanders of the Pacific have a similar non-chronological notion of time.<sup>129</sup>

This was the same conclusion drawn by the anthropologists Evans-Pritchard and Paul Bohannan concerning the beliefs of the East African Nuer and Nigerian Tiv respectively. For these African people time does not so much as move forward, but rather provides a series of consecutive rooms for ongoing human actions.

I should point out that all this does not mean that traditional societies have no concept of passage of time on a mundane or day-to-day basis, for instance peasant farmers know exactly when to plant their crops. It is rather that for them "accumulated" time is a symbolic representation of time in general, much as the clockwork time-grid belief is for Westerners.

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<sup>127</sup> The Western notion of linear time is partly a product of the invention of the clock and classical science, but is also rooted in a much older religious belief. This is the Judaeo-Christian one that broke with the notion of re-incarnation and introduced a god who creates historical time and progress: "promised land" for the Jews and Christ's once-and-for-all "second coming" for the Christians.

<sup>128</sup> See Whorf (1956).

<sup>129</sup> For books by Margaret Mead on the Pacific Islands see 1939, 1943 and 1944.

This notion of time being something that is gathered helps explain why old people amongst the Hopi, the Pacific Islanders and traditional Africa are so respected, for they are holding and carrying more time than the young and are therefore the repositories of history and wisdom. Westerners, on the other hand, often depict this "timelessness" in a negative sense: as "manyana", "African time" and the general lack of an exact industrial clockwork time-sense.

The old belief in accumulated time also means that any particular moment embodies earlier moments, and at the highest symbolic level the whole of universal matter and history time are embraced in the "eternal now" of the supreme being or spirit. At a more personal level this means that any particular moment of time or "now" is as important as any other, as all of them contain all previous moments.

This explains why people in many developing countries always seem to have time on hand. For instance, they have time to stop and talk with others, even strangers, when walking down the street. In Western cities people have little time to greet each other on the street<sup>130</sup> as they are too busy planning to be somewhere else and therefore not appreciating the "now".

There is even a "now" of accumulated time in African polyrhythmic music, which is a single cycle of an African Beat that holds within it a number of differing rhythmic patterns and seems to temporarily suspend time. In Chapter One the Beat was depicted spatially as a circular Figure in which all the rhythmic figures and sub-patterns can be recognised at a glance and with gestalt immediacy. In short the Beat is actually a chunk of accumulated time, gestalt time and spatial time<sup>131</sup>: which are simply different names for the same phenomenon.

The reader may here object that this reasoning is tautological, as all I have done is first turn the music into a geometrical or spatial picture (i.e. a two dimensional drawing of

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<sup>130</sup> Indeed if one were to do this one could be arrested for harassment or "loitering with intent".

<sup>131</sup> This of course does not apply to the linear melodies of song and the long tonal passages of master-drummers that span multiple Beats and which, therefore, operate in a sequential rather than spatial mode.



the Beat) and then called the result "spatial". This spatial analogy may not represent what is going on inside African cultures, only what is going on inside my own head. I should point out, however, that Africans commonly use spatial metaphors in their music.<sup>132</sup> An example provided by the American ethnomusicologist Ruth Stone in her book *Let the Inside be Sweet*<sup>133</sup> is that the Kpelle people of Liberia see time as a "three dimensional spatial construction". This, she thinks, explains why so many Kpelle musical expressions are couched in terms of geometrical shape. Some examples she gives translate as "raising (i.e. beginning) the song", "cutting the edge" (i.e. the pausing) of the song, and the song "going down the road" (i.e. in correct temporal alignment).

### ***Conclusion***

Cosmic togetherness is expressed as the unifying spiritual energy that animates and instantly links up a disparate universe. Sometimes this vital energy is presented as a cosmic sound: the Chinese yellow bell, the Hindu Om and ancient Egyptian formative vibrations known as "neters". In Africa it appears as the collective pulse of the Beat that no one actually plays, and also as the complex interference of instrumental buzzing devices that facilitate communication with the spiritual realm.

Holism is also expressed as "timeless" time: the gestalt instantaneity of the Beat, the "eternal now" of a vital divine spirit and non-chronological time (e.g. "African time") in which time becomes geometry and every moment or "now" an accumulated product of all previous ones.

Holism and timelessness in traditional Africa is also enhanced by notions of circularity, reincarnation and the "eternal return" and it is to this topic that we now turn.

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<sup>132</sup> And also in Europe as was noted earlier in the book in connection with musical notes being high and low, and being arranged into ascending and descending scales.

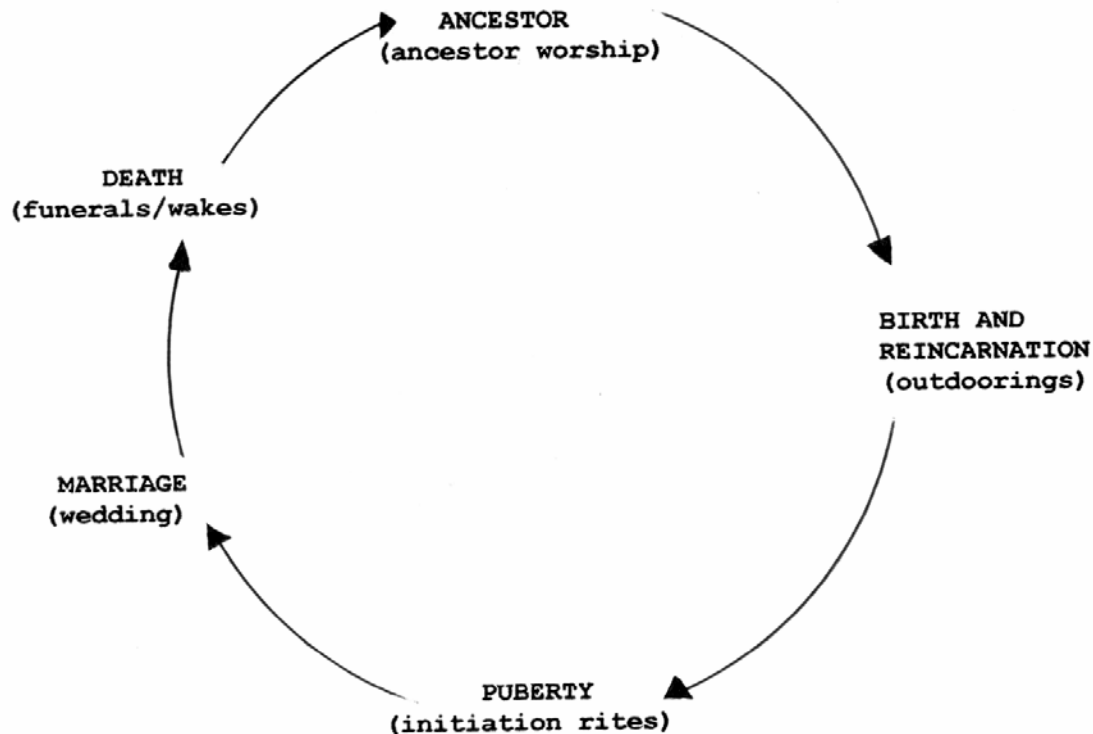
<sup>133</sup> See R. Stone (1982).

## Theme Five: Circularity – The Eternal Return, Life Cycles, Serpents and African Mandalas

### *The African Life Cycle and Seasonal Rounds*

The fundamental unit of the African Beat is a musical loop or time-line that ties up all the staggered entrances and endings of the sub-rhythms. Moreover, many African dances that accompany the music are circular, serpentine or involve spinning around. Indeed the concept of curved time permeates African life.

Let us begin at the individual level. Africans believe that when people die they become ancestors who can be appealed to for help, or can directly affect the living by being reincarnated. The human life span is therefore seen in Africa as a cycle of birth, death and re-birth: as pictured below and reminiscent of the Eastern reincarnating "Wheel of Life". Indeed, as it so much resembles this Eastern mandala I will call it an "African mandala".



*Figure 34: The African lifecycle as Mandala*

The Figure above illustrates how a person's life is divided into discrete phases, with movement from one to another being separated by various rites-of-passage which, as discussed earlier, often involve ritual reversal. The circular view of life explains why African funerals and wake-keepings involve much merry-making. They not only mourn the loss of personal life but also celebrate its transformation into another state of being. Indeed, African funerals literally turn death into life; for it is here that the whole extended family meets in a show of solidarity during which arrangements for new marriages and therefore new life are made. The continuity between the living and the dead also explains why African children are often named after their grandparents and forebears. For example, the Akan name Ababio means "the person has come again", and the Ewe name Degbo means "gone and returned".

Amongst the Karimojong of Uganda age-set associations are also organised into cycles. Age-sets span about twenty-five years, and four of these are joined by the Karimojong into a grand cycle of one hundred year in which there is, at any one time, a junior, a senior and two successively older dormant one. A distinctive coloured emblem represents each of the four age-sets.<sup>134</sup> As time passes on the junior age-set becomes senior, the senior one becomes dormant and the emblem of the last dormant one is then passed on to the new junior age-set. This goes on every twenty-five years until the cycle is completed: and then continues again.

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<sup>134</sup> The age-sets roughly correspond to youth (junior), adult parenthood (senior), elder and grandparent (first dormant) and finally (last dormant) great grandparenthood and death. The colours (and emblems) of the four age-sets are yellow, red, yellow, red leading back in the next cycle to yellow. This arrangement follows the affinity of alternate generations often noted by anthropologists studying African and other pre-industrial societies.

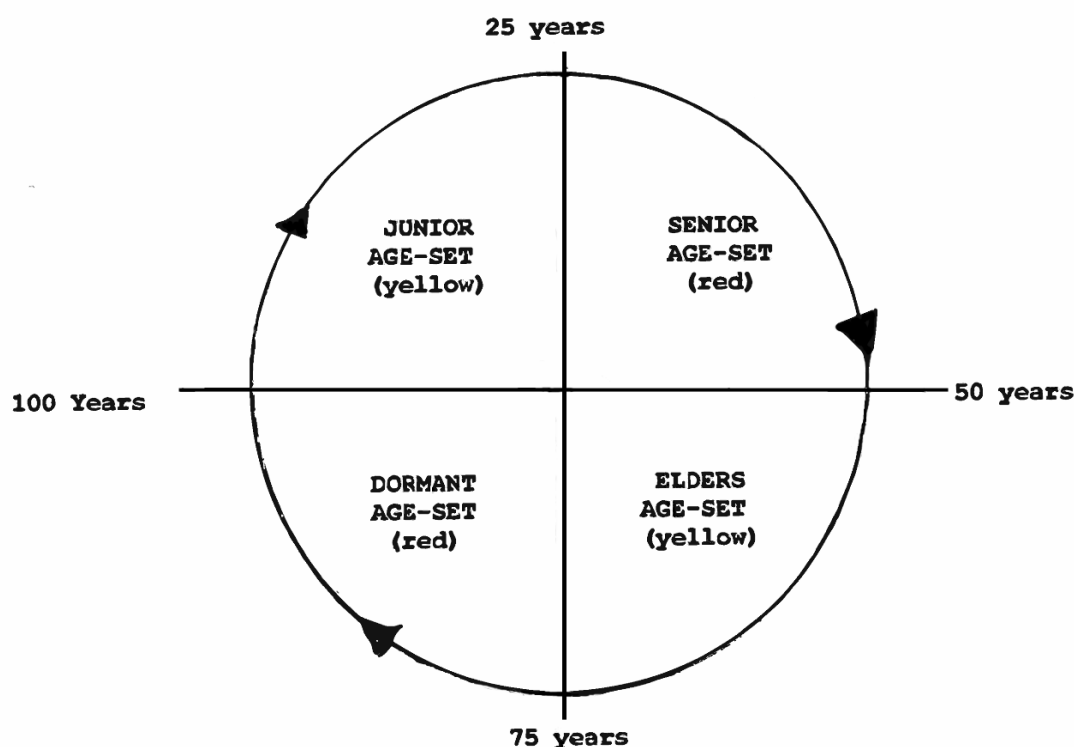


Figure 35: Age-sets as Mandala (Modified from Zaslavsky [1999: 263])

In addition to individual life spans and age-set cycles, curved time in traditional African societies is also applied to diurnal, seasonal and astronomical change. The daily circuit of the sun, the monthly periods of the moon and the longer cycles of the zodiacal year are often associated with deity. There are often rituals and festivals dedicated to them, and particularly important are agricultural festivals that mark the round of fertility, growth and decay.

Examples of these annual agricultural festivals in pre-colonial Africa include the already mentioned Homowo harvest festival of the Ga people and the Odwira yam festival of the Akan. Amongst the Igbo people farm-produce is dedicated to their earth goddess Ala, often depicted in her Mbiri shrines as a clay fertility figure with a child on her knee and accompanied by the image of a crescent moon. Many annual festivals in Africa are connected with the coming of the rains, expressed metaphorically as the fertilisation of the feminine earth by the

male sky-god. This, for instance, is why in the Mbiri shrines of the Igbo people, their goddess Ala is often accompanied by the figure of a storm-god.

One of the oldest surviving myths concerning the cycle of birth, death and rebirth is the ancient Mediterranean one of the Phoenix bird that is resurrected out of its ashes. This ancient Greek fable<sup>135</sup> is actually derived from North Africa and is related to the ancient Egyptian Sothic Calendar. The standard solar year is six hours longer than 365 days. However, unlike our present practice of waiting every four years to make a full extra day each leap year (i.e. February 29<sup>th</sup>) the Egyptians waited an incredible 1460 years, until these quarter days added up to a full year. During this Sothic Year of celebration the sacred eagle, dedicated to the sun god Ammon-Ra, was sacrificially burnt to ashes. However, even the Sothic Year had its extra six hours, which for the Egyptians became the renewal of another one-and-a-half millennia Sothic Cycle.

I should mention here that the Akan of Ghana also traditionally use a bird as an emblem of the continuity of past and present. This Sankofa Bird is often found carved on top of the wooden staffs of chiefs and kings. This mythological bird is forward moving but backward looking. "Sankofa" literally means "go back and retrieve": advising Akan people to continually draw on the wisdom of their ancestors.



*Figure 36: The Akan Sankofa bird "Go Back and Retrieve" (as Adinkra symbol and staff carving)*

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<sup>135</sup> See Robert Graves (1958 and 1961).

From the above Figure one can see that the Sankofa Bird also embodies a circular mandala-like motif. Indeed, some Akan representations are completely ring-like, with the bird's beak touching its tail. As a circular symbol for joining beginnings and ends the Sankofa Bird complements the "life cycle" mandala depicted earlier in this theme on circularity. Whereas the reincarnating "life cycle" joins the end of life to a new beginning, the Sankofa Bird mandala turns the present towards the past.

### *Ancient Spirals and sacred circles*

Individual, social, agricultural and ritual events cyclically wound along in old Africa, which is why the circle, the sphere and spiral motifs took on such a special significance to them in their religions: and indeed those of many of the world's old polytheistic religions. For many Eastern faiths the most important emblem of totality is the already mentioned "mandala" or sacred circle.<sup>136</sup> The most famous of these is the Chinese Yin and Yang symbol (depicted below), which represents the wholeness or "Tao" that combines two dynamic but opposing forces.



*Figure 37: The Chinese Yin and Yang mandala*

In the above mandala the black Yang force (positive, masculine, heavenly) is in a constant state of interplay with its white mirror image Yin (negative, feminine and earthly) – one swelling out where the other diminishes. The internal small dot-like circle suggests that the twin forces are never exact mirror

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<sup>136</sup> For the Hindus of India, the mandala portrays Atman (or Causal Body), an oneness that merges all opposites. The Buddhists call this cosmic unison, Bharmakaya.

images of each other as each, to some degree, contains aspects of the other. Although not depicted the small dot also contains opposites, resulting in circles within circles within circles and so on in endless regress. Tao is the equilibrium between all these complementary tensions.

The sacred circle in ancient Egypt appeared, as referred to earlier, as the Cosmic Egg or Orb of Creation, Atum. The circle was also associated with sun's diurnal motion across the sky, which the Egyptians believed was the solar disc on the head of their sun god, Ammon-Ra. In one myth this sun god completely encircles the heavens and the earth by riding a boat that arcs over the earth during daytime and underneath it at night. In another myth he is swallowed in the west by the goddess Nut in the evening, and then invisibly passes inside Nut's arching body to be reborn in the east between her thighs in the morning. Therefore, instead of making a complete circle Ammon-Ra therefore does a double loop, once east to west in his masculine and visible form and once west to east concealed inside the feminine form.

In ancient times celestial snakes also represented the cyclical harmony of the cosmos; and examples include the Egyptian Sistrum, the Greek Python, the Aegean Caduceus and the Chinese dragon. This belief was often enacted out in ceremonies involving serpentine, circular and spiral dances whose coiling movements represented the "wheel of life" and the spinning of the heavens. Indeed, according to an inscription on a tomb at Abydos in Upper Egypt, the snake deity is the one "who dances in the shadows".<sup>137</sup>

The Aegean civilisation was particularly famous for its spiral dances, also known as Crane Dances, a bird sacred to the North African huntress and snake goddess Neith. Masked priests and priestesses who danced in circles whilst chanting verses performed these dances.<sup>138</sup> Another name for this serpentine Aegean dance was the Maze Dance. This took its name from the

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<sup>137</sup> For more information on ancient Egyptian and Aegean religious snake motives see Evans (1901), Clark (1959), Guthrie (1987), Fontenrose (1959), Graves (1961) and Willetts (1962).

<sup>138</sup> The Greek word for verse "strophe" means to turn.

maze in the Minoan capitol of Knossos on the Island of Crete. This maze, known as the Labyrinthe, was actually the Hall of (double) Axes where initiation ceremonies were performed by bull-masquerader performing spiral dances and somersaulting over live bulls.

According to the historian Robert Graves (1961), the later Indo-European Greek invaders were referring back to this Minoan bull-cult ritual in the legend of their hero Theseus, who kills the bull-headed Minotaur monster and escapes from the labyrinthian maze with help of the king's daughter Ariadne.<sup>139</sup> Greek legend also has it that Ariadne taught Theseus the spiral dance and bore him a son called Hippolytus, to whom a cult was established in Troy involving spiral "Troy dancers".<sup>140</sup>

Although patriarchal Indo-Europeans conquered the Greek mainland, the older Aegean and North African religions persisted there throughout Classical Antiquity. In Greece these survivals were fertility-cum-mystery cults such as those that had their headquarters at the shrines at Delphi and Eleusis<sup>141</sup>. These celebrated the agricultural cycles of growth and decay and involved the "re-birth" of cult initiates.

The most of important of these old shrines was the Delphic Oracle<sup>142</sup> that was consecrated to the agricultural goddess Demeter (equivalent to Egyptian Isis) and her two consorts, the pipe playing goat-god Pan and the wine-god Dionysus (Roman Bacchus). The shrine was situated in a cave in Northern Greece underneath which the dragon Python or Typhon (equivalent to Egypt's Suto) was thought to be buried. The "Pythia" priestesses

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<sup>139</sup> Minos was none other than the title of the king of Crete (i.e. King "Minos" plus "Taurus" or bull), the Labyrinthe was the complicated palace of Knossos and Ariadne was a Cretan nature goddess mythologically demoted to King Minos' daughter by the patriarchal Greeks.

<sup>140</sup> It was under this name that the spiral dances spread westwards to Europe. For example, the word "Troyin" has been found inscribed on Scandinavian megaliths while Caer Droia (Citadel of Troy) is the old Welsh name for prehistoric spiral designs cut into turf. Moreover, in Welsh legend King Arthur visited Caer Sidi (the Spiral Castle) and Caer Arionhod (the Citadel of Ariadne).

<sup>141</sup> See Kerenyi (1967).

<sup>142</sup> "Del" means womb in Greek. See Fontenrose (1959) and Harrison (1922 and 1962) for more detail.



filled the cave with intoxicating smoke, which got them possessed and enabled them to divine the future.

Not only at these shrines, but also throughout Greece and Rome, fertility celebrations and ritual drama involving dancing, masked revelries, drunkenness and orgies were held annually to commemorate the mythical death and rebirth of the wine-god Dionysus "twice born".<sup>143</sup>

The Dionysian (and later Orphic) Mysteries did not only influence Greek music, dance and drama, but also many of its greatest thinkers. One was Pythagoras who belonged to the cult of Dionysus and took his name from the oracular Delphic Python and its Pythia snake-priestesses. Pythagoras therefore believed in the reincarnation of souls, in the idea of a cosmic egg (Phanes), and that behind reality there is a universal pattern or logos that is best expressed by the laws of musical and mathematical harmony.<sup>144</sup> We have already noted in Chapter One that Pythagoras travelled to Egypt where he obtained many of his mathematical ideas.<sup>145</sup> His notion that sounds are linked to numbers may also have come from there, for in some versions of the Egyptian creation myth, the Cosmic Egg (Atum) fashions the universe by uttering the secret names of the demigods which acoustically vibrated the Primal Waters. For this reason, these elementals all have a secret sound and formative vibrational number or "neters".

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<sup>143</sup> It was these licentious Dionysian rites that eventually grew into the calmer rituals of the Greek Orphic Mysteries, associated with the mythical Achaean hero, Orpheus. Legend has it that he was trained in Egypt and could tame wild animals with his seven stringed tortoise-shell lyre. In the Orphic Rites frenzied Dionysian possession became sobered down to sacred masked pantomime, which in turn became the basis of the Greek theatre of Euripides and others in the fifth and sixth centuries BC. It was then that sacred drama was secularised, full possession turned into the inspiration of the artistic muse, women were excluded from performance and the circular Dionysian dithyrambic choral dances became the linear ones of the stage.

<sup>144</sup> See Guthrie (1987).

<sup>145</sup> Greek schools of learning, established by the disciples of Pythagoras after his death continued to develop many of his mathematical and harmonic theories. These included the concept of the Golden Mean or Golden Rectangle (the mathematical ratio Phi, or 1:1.16) that was to play such an important part in Greek art, architecture and aesthetics. This Pythagorean formula, like others of his, is found built into the design of some of the pyramids, such as those of Cheops.

One hundred fifty years after Pythagoras, another important Greek philosopher was Plato. He was influenced by both Pythagoras and the Orphic tradition and visited Egypt. It was the Platonist or neo-Platonist school of Alexandria in Egypt that later developed the notion of the “music of the spheres”, conceiving the cosmos as a hierarchy of seven invisible globes, sliding one within the other and creating a scale of notes only audible to the initiated. This scale ascended from the low notes at the earthly level to the high pitched ones of “seventh heaven”: which is why still today we use this spatial metaphor when we talk of ascending/descending scales and high or top and low or bass notes.<sup>146</sup>

### *Serpents and other African Mandalas*

We have already touched on some African examples of African mandalas. The Egyptian Orb-of-Creation, Atum: the revolving worlds and Egg-of-the-World (Po Tolo) of the Dogon and Bambara: the cosmic “lightning” egg (Aki Ngoss Eyo) of the Fang mvét harp-zither players of Gabon and Cameroon: the solar-discs of Saharan sacred rams. In discussing other examples I will first turn to one particularly important circular or spiral motif found in traditional African: namely, the divine serpent.<sup>147</sup>

When swallowing its tail the snake symbolises reincarnation and thus gives a pictorial representation of the life cycles and seasonal rounds discussed earlier. As wrapped around each other in a double spiral, serpents embody the polarities of male and female, heavens and earth. Moreover, by straddling the earthly and the divine the celestial snake is often seen as a trickster-god, bringing down either oracular wisdom or chaotic doom and destruction.

Snake deity are found all over Africa and some very ancient ones have already been referred to. Snakes are depicted on

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<sup>146</sup> In later Classical times the doctrines of the Orphics, the neo-Pythagoreans and neo-Platonists, became collectively known as the Hermetic Writings, named after Hermes (Roman Mercury), the winged trickster messenger of the gods who was equated with the Egyptian god, Thoth. Both carried the Caduceus staff with its double coiled snake symbolising the balance of cosmic opposites. See J. James (1995) and Meyer-Baer (1970).

<sup>147</sup> Also see Hambly (1931).

eight thousand year old Saharan rock paintings. The Egyptian heavenly serpent Sutekh encircles the cosmic egg Atum and so prevents Atum from dissolving back into chaos. The Egyptian/Aegean double entwined Caduceus snake-staff is associated with the Thoth priesthood and medical cult and with Hermes (Roman Mercury).

These old beliefs in divine snakes are also found in many traditional sub-Saharan beliefs, and have persisted into the modern era. In West Africa there is the Ga snake-god Awudu, the Fon holy python of wisdom Da-Vodu or Da-Gbi, the Yoruba celestial snake Oshumare and the Eastern Nigeria war-god Ogidia. Amongst the Akan there is the royal python clan-totem as well as their serpent-tailed forest devil, Sasabonsum. From other regions of Africa there is the Itoshi ancestor serpent of the Ila people of Zambia, the Kalunga snake-figure of the Ngangela people of Eastern Angola and northwest Zambia, and the double entwined snake on Zulu staffs. Particularly well known is the West African Dahomean rainbow-snake, Ayido Hwedo. Furthermore, African slaves took this old Dahomean celestial snake-deity to Haiti where it became the Voodoo god Damballah-Ayida or Baron Samedi, the good-serpent-of-the-sky and guardian of the crossroads.

Amongst the Dogon the holy python is the creature that mythically turns ancestors into even higher beings, reflected in ceremonies with performers wearing huge masks with snake markings. Many of these masks are hundreds of years old and have collected around them a large body of dances and drum styles through which the Dogon communicate with their Nommos, the spiritual guardians of the universe. This explains why the Dogon call drum skins "Nommos ears". Other African societies employ snake-cults that employ drumming and dancing to receive divine knowledge. The priestesses of the Nigerian Ijaw people worship their python deity Adumu by whirling in an oracular trance. The priests and seers of the Bundu people of Southern Uganda obtain oracular knowledge from their serpent deity when dancing and wriggling about on the ground.

The snake even gave its name to one African empire. This is old kingdom of Dahomey<sup>148</sup> in the present-day Republic of Benin, for the word “da” actually means snake in the Fon language. The Fon Vodou religion is in fact replete with snake deities. A very important one is the previously mentioned rainbow deity Ayido Hwedo that made its way to Haiti. This plays exactly the same role in creation as does the ancient Egyptian celestial snake Sito; for Ayido Hwedo surrounds the Fon cosmic egg, Nana Buluku, and helps the first divine twins, the earth/moon goddess Mawu and the sun/sky god Lisa, shape the universe. Moreover, because Ayido Hwedo is thought to encircle the cosmic egg, the Fon often depict it on carvings and ornaments as a snake biting its own tail.



*Figure 38: Ayido Hwedo from a Dahomey wall painting at Abome*

The Vodou pantheon is produced by Mawu-Lisa as a series of twin deity and this polarity, in fact a double one, even affects Ayido Hwedo itself: for as this celestial serpents encircles the cosmos, one half is thought to be in the sky and the other below the earth. Furthermore, the celestial part of the semicircle is itself divided into two, the masculine movement of the sun and the feminine arc of the rainbow.<sup>149</sup> In short the celestial snake biting its tail and so combining beginnings and ends, is holding the Fon universe together.

Let us now turn to some other African circular pictorial metaphors for unity. Some are found in the circular stamp

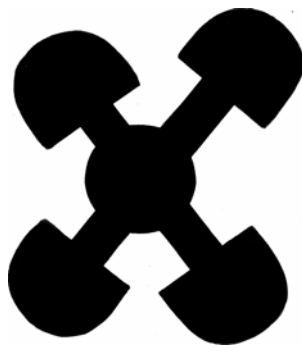
<sup>148</sup> See Herskovits (1938) and Argyle (1966).

<sup>149</sup> Indeed, the rainbow is often equated in Africa with a protective serpent deity, examples occurring amongst the Yoruba, Hausa, Zande, Massai and Zulu peoples.

designs the Akan use to decorate their local Adinkra cloth. One, which has a spinning quality, is called Gye Nyame, or “unless God”, which symbolises the omnipotence and omnipresence of the supreme creator Onyame or Onyankopon. Another is called Akoma Ntoaso, or “joined hearts”, which is the emblem for togetherness and concerted action. Like some Eastern mandalas this African one depicts the notion of unity and stability by combining the motifs of a circle with the foursquare. These two Akan mandalas are depicted below.



*Figure 39: Gye Nyame – the Akan mandala of spiritual unity*



*Figure 40: Akoma Ntoaso – the Akan mandala for togetherness*

This Akan idea of expressing the perfection and oneness of Onyame as a circle is actually danced out during Akan traditional akoma religious ceremonies by priests. In a movement known as “Ntwaaho” they move in a circle whilst making a series of pivotal turns, before which the priests acknowledge the “four-winds” that carry the words of god to them.<sup>150</sup>

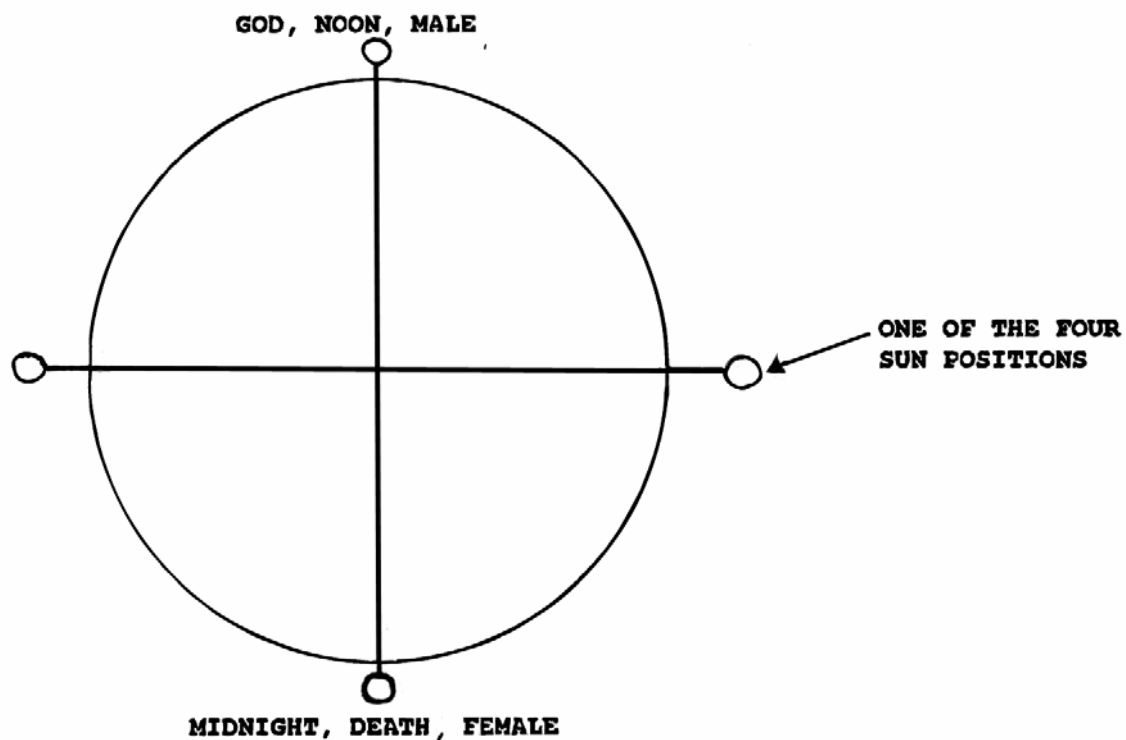
Another type of circular motif is found in the way some African societies design and organise their round-huts. The Herero of Namibia for instance equate the wall with society and

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<sup>150</sup> See A.M Opoku and Willis Bell (1965).

the central pole with the ancestors who bind together past, present and future. Furthermore the left side of the hut (in relation to the door) is considered female whilst the right is male: a division also found amongst the Zulu and Swazi of Southern Africa and the Dogon of West Africa.<sup>151</sup>

A final example of a curved metaphysical symbol in Africa is the “Yowa” ground sign of the Bakongo people of the Democratic Republic of the Congo, which, according to Farris Thompson<sup>152</sup>, is marked out on the earth as a cosmogram in which worshippers stand. The Yowa cross, and its unification by the circle of reincarnation represent the contrary forces of masculine and feminine, day and night, living and dead. This Central African mandala is depicted below.



*Figure 41: The Yowa – a Central African Bakongo mandala*

<sup>151</sup> See Sundermeier (1995).

<sup>152</sup> See 1984.

### *Conclusion*

African musical holism is partly a result of its circular motion; or rather circles within circles. This begins with the oscillating chains of up and downbeats of the individual rhythms. These then interlock into the polyrhythmic cycle of the Beat, which in turn form the basis of the longer spirals of the master-drum passages, choreographed dance turns and the call-and-responses of cantor and chorus.

This curved worldview is also apparent in many African myths concerned with cohesiveness and recycling. There is the belief in reincarnation, in the “eternal return”, and in the image of a supreme being as an invisible axis around which lesser “refractions” and spiralling worlds revolve. Then there are cosmic eggs, celestial serpents, solar discs, cloth and ground designs and other African mandalas. Dances are also often circular, as are the ritual rounds of life and death associated with the agricultural festivals and individual life cycles.

## Theme Six: A Driving Touch of Asymmetry – Tricksters and Ritual Clowns

Modern Europeans tend to conceive time as being linear, progressive and historical, whereas in traditional Africa (and other pre-industrial societies) there is also, as discussed in the two previous themes, an important timeless element: the accumulated and spatial time of the “eternal now” and the repetitive cyclical one of the “eternal return”.<sup>153</sup>

We have already noted the timeless element of the African Beat resulting from its fusing of beginning and ends into a seamless loop, and its various internal rhythmic symmetries. One way forward propulsion is added to this steady-state musical construction is by the addition of uneven and unstable percussive patterns, like those of the bell. Furthermore, there is a bias in the direction of African dances, for the circular dances that accompany the music are invariably anti-clockwise.<sup>154</sup> Indeed, this anti-clockwise bias is so strong in Africa that it became commonplace amongst the black populations of the New World. The American folklorists John and Alan Lomax<sup>155</sup> have observed that the ring-dances of the Southern United States, the Bahamas and of Haitian Voodoo always move anti-clockwise. Others have noted a similar spin for the dances that accompanied the African American spirituals, and indeed the circular dances of modern African American Pentecostal churches.

As has been discussed earlier in this chapter, the African mythical realm has its eternal reincarnations that merge beginning with end, its balanced divine twins, its syncopated harmonies between the heavens and earth and other cosmic polarities. Timeless stasis is prevented in this scenario by the addition of tricksters and Promethean spirits. Examples previously mentioned include the asymmetrical Yuruga of the Dogon, the destructive/creative Yoruba iron-god Egun and the

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<sup>153</sup> See Eliade (1954).

<sup>154</sup> Africans also greet and shake the hands of a group of people in a counter-clockwise direction.

<sup>155</sup> See Lomax (1954).



mercurial Legba/Eshu of the Fon and Yoruba. All of these provide a touch of destabilisation that helps makes the African metaphysical world move forward and go round.

At the more mundane level, human clowns stir up African ritual rounds and courtly protocol. The liminal "lords of misrule" and pranksters associated with rites-of-reversal have already been mentioned. A specific case of ritual satyrs are the male and female dancing jokers, or "avulesis", that provide light relief at the solemn ceremonies of the Yewe thunder-god cult of the Ewe people of Ghana.<sup>156</sup> Examples of African court jesters include the pygmy Danga at the court of the Egyptian Pharaoh Dadkeri-Assi in 2,500 BC, the "mayombe" of sixteenth-century Mozambique and the "asa" at the palace of the old Nigerian state of Oyo. More recently Kwame Nkrumah, the first leader of Independent Ghana, was regularly entertained by the Nigerian clown Ajax Bukana who was even able to gate-crash cabinet meetings.

The dynamic impulse provided by irregularity is actually depicted in some African and other ancient circular mandalas, for it is their very lopsidedness that represents propulsive drive. One example is the Chinese Yin and Yang sign in which the two polar principles are not quite exact mirror-images of each other, because of their infinitely receding dots within dots within dots. Another is the left-handed spin of the ancient Tibetan Swastika (which Hitler turned clockwise). African instances include the anti-clockwise spin of the Akan Gye Nyame design and Fon celestial serpent Ayido Hwedo depicted earlier. Another is the particular handedness of the corkscrew motion of the double entwined snakes on Zulu staffs.

### *Conclusion*

The circular African Beat contains vital asymmetrical forward-propelling rhythms. Likewise, the divine symmetries, the eternal fusing of beginning and ends and the timeless "eternal now" and "eternal return" of the broader African metaphysic is destabilised and pushed: by Promethean spirits, aberrant tricksters, anti-clockwise spins and the unorthodox antics of ritual clowns.

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<sup>156</sup> See Avorgbedor (1987).

## Theme Seven: Mature Poise – Elders and the Balance of the Hot and Cool

It was noted in Chapter One it is the master-musicians and seasoned dancers of Africa who are able to handle all the pluralities of polyrhythmic music and motion. We will therefore turn here to the African ideal of the wise elder and veteran priest who has to orchestrate a whole cluster of roles and perspectives within the broader socio-ritual African arena. As in music, these exemplars have to combine multiple tasks and have to juggle the seeming opposites of positive and negative, beginning and ends, the hot multiplicity of the bustling external world with the cool collectedness of the inner one.

### *The Equilibrium of the Elder*

The traditional elders, priests and priestesses of sub-Saharan Africa not only worship polytheistic deities and employ polyrhythmic music, but also have to be polymaths who carry out many different duties. These include medical doctor, lawyer, psychologist, historian, artist, genealogist, oracle and in some cases, political leader.

In addition they are also required to be masters-of-ceremonies at multimedia events that include everything from music, dance and drama to martial arts, masquerades and poetry. To coordinate all of this, African priests and elders, like master performers, have to undergo years of training and self-discipline to achieve the requisite sense of poise.

This goal of mature spiritual balance is also found in other polytheistic religions. For instance, the calm enlightened countenance on figurines of the Indian god Shiva displaying a confusing array of arms. One hand holds the drum of creation, another holds fire the destroyer, a third points to the karmic world of matter, whilst the fourth hand, with palm facing forwards, signifies the peaceful inner stillness of Sartori. In Africa a similar timeless composure is found on the statues and painted faces of Egyptian pharaohs, on Nigerian bronze busts from Ife and Benin and on many of the carved ancestral masks of Africa. Calmness is also found on the living faces of African dancers

who, like the Indian Shiva, are cool amidst the most complex body movements. Indeed Robert Farris Thompson's (1980) description of a Nigerian Igbo dance is remarkably similar to that of Shiva described above, for while the upper body of the African vibrates violently "equilibrium is shown by the relatively motionless extension of the open palms in front of the dancer".

Many African societies have a special word for this concept of poise and an inner silent space within the general hustle-and-bustle of everyday life. The Yoruba refer to it as *Itutu*, the Akan as *Bokoor*, the Ga as *Bleoo*, the Dagomba as *Baalim*, the Ewe as *Dododo*, the Mandinke as *Suma*, the Tiv as *Kundu-Kundu*, and the Mbuti Pygmies as *Ekimi*. African American jazz musicians know it as "Daddy Cool". Almost invariably there is a word for its opposite. *Yirin* for the Dagombas, *Basa-Basa* for the Akan, *Gidi-Gidi* for the Ga people and *Gonni* for the Mandinka; all of which imply becoming obsessed with and fired up by the ever-changing material world: or what the Mbuti pygmies call "akami" (noise) and Ghanaians the "skin-pain" of inter-personal friction. In this distracted state one becomes disoriented and unable to react thoughtfully to any given situation. To prevent this one has to cultivate emptiness and "cool the heart" as the American musicologist John Chernoff (1979) was told by his Dagomba drum teacher Alhaji Ibrahim Abdulai.

However, a person cannot achieve this tranquillity instantly, as it obtained through the gradual process of learning skills from the more mature and experienced: the craftsman and apprentice, the master-performer and pupil, the sage and initiate, the priest and acolyte. In each case the novice has to master one skill, one rhythm or one pattern at a time, until finally the skill of skills, the rhythm inside rhythm and the pattern of patterns is discerned.

The cool sage or exemplar comes in many different guises and under many names in Africa: the master-carver who hones down one shape from a myriad of possibilities, or the painter who depicts many perspectives at once, rather than that of the single eye of the beholder. Then of course there is the master-drummer who moves effortlessly between all the rhythms, angles and orientations of the polyrhythmic Beat. At a more

regal level are the Akan Kings and Queens who gracefully perform the complex adowa dance and its forty-odd stylised hand gestures. In the priestly domain there is the Baba of the Yoruba people who learns countless Ifa poems to gain oracular wisdom. Then there is the Dogon priest or Hogan who tries to re-harmonise a world put askew by the Pale Fox trickster, Yuruga. In the case of the Fon there are their Vodun priestesses who can dance like fire whilst balancing heavy pots on their head.

The harmonising of countless artistic, spiritual or worldly crosscurrents needs an inner equilibrium and anchoring point. This mellow poise also enables adepts to creatively concentrate even whilst being attentive to others and negotiating opposites, and to reach the African ideal of a personal inner inventive cool within the noisy crosscurrents of the external world. For African master-musicians it is the egoless mode of listening and improvising within set rhythms. For the seasoned dancer it is the centred body that enables new movements to be added to a corpus of stylised gestures. For carvers it is the acute awareness of emptiness that allows them to hone out one particular shape from the many possibilities of their materials. For the Fon priest or Bokono it is the patience and integrity they gain from their fourth Sekpoli soul.

### *The Hot and the Cool of the Old Religions*

This ideal of harmonising opposites is not only found at the personal level of master performer, elder or priest but is also expressed in traditional polytheistic African religions that present complementary paths to worship.

We have already come across this double road to worship with the Ila of Zambia (see Figure 2, Theme One). Their religion, like so many in Africa, is founded on sexual polarity with geographical space compared to the body of a woman and time being a purely masculine affair. The anthropologist Evan Zuesse (1979) calls these two complimentary aspects of Ila cosmology "ascending" and "descending" symbolic systems. The female "ascending" form of worship uses intuitive and subconscious body and sensory experiences to inductively build up a picture of

reality: from polarities such as hot and cold, left and right, dark and light. The male "descending" system, on the other hand, is an abstract and preconceived one based on esoteric knowledge of the divine plan and its cosmic elements.

Another way of classifying these twin aspects of this traditional East African belief system is to simply call them "hot" and "cool". We have of course already come across these caloric metaphors. In Chapter One they were used in connection with the "cool" stabilising Beat that co-exists inside cross-rhythmic frictional "heat". Earlier in this chapter these two terms appear as the cool quality that the mature African personality cultivates within the noisy "heat" of the hustle-bustle world.

When turning to religion, the "hot" road to worship therefore centres around the flux of immediate moment-to-moment body experiences, including subconscious dreams and intuitions, expressive spiritual communion and possessional states, often enhanced through the stroboscopic effect of music and dance: in other words, the "ascending" side of things. "Cool" worship, however, is gradually acquired knowledge of the principles of divination, mythical order and ritual law, in other words, the cerebral, instrumental, detached and "descending" path. It should be pointed out that these two religious avenues are not necessarily mutually exclusive.

Before going on to some other African examples of this double religious path it should first be pointed out that polytheistic societies other than African exhibit this dichotomy. The most important of the ancient Roman mystery religions was the Bacchic or Dionysian cult imported from Greece. This revolved around the legend of the northerly sun god Apollo defeating the older local Aegean gods Dionysus and Python at Delphi in Greece. Apollo was thus worshipped in Rome during the summer months whilst the wine-god Dionysus (Roman Bacchus) ruled in the winter. Indeed, the expressions Dionysian and Apollonian became part of Roman and subsequently the English language, epitomising two complimentary ways to worship and ways of life. Dionysus became associated with "hot" spontaneity, revelry and enthusiasm, whilst the lofty

Apollo became associated with the cool introspection, order and intellectualism.

Ancient China similarly had two reciprocal faiths that a mature person was expected to belong to at the same time. One was the more individualistic and informal faith of Tao, based on immediacy, spontaneity and the intuitive balance of Yin and Yang. The other “cooler” one was the straight-laced religion of Confucius (Kung Fu Tzu) with its strict formalities, ancestral rituals and sacrificial obligations.

Gilbert Rouget in his book on music and trance<sup>157</sup> divides religious trances of the world into two varieties: namely possessional and ecstatic. The possessional variety involves sensory over-stimulation and the ecstatic one sensory under or non-stimulation. Both these can be equated to the caloric metaphor being discussed. Full possessional trance is “hot” as it is done in company and includes drumming and vigorous dancing. Ecstatic-trance is of a “cooler” nature and is undertaken in relative solitude and stillness. An African example he gives of this double approach is found amongst the Wolof of Senegal whose Ndop ceremonies involves crowds, intoxication, drumming, chanting, frenzied convulsive dance and possessional states that cannot be recalled by the individual afterwards. Wolof Muslim-influenced Marabouts, on the other hand, retire to quiet grottoes to have divine Khalwa waking visions that can be consciously recalled.

To take a more detailed look at this pluralism of worship in Africa we can take the particular case of the Fon of the modern-day Benin Republic whose polytheistic religion invokes the gods in two ways – through the “hot” possessional Vodun cult and a “cool” system of divination known as Fa or Destiny.

The “hot” Vodun faith of the Fon and of the neighbouring Ewe people (of Ghana and Togo) operates from a number of shrines, each with its favourite deity selected from the larger pantheon. It is from these deity that cult members obtain emotional release and oracular knowledge through a process of spirit possession, what Western psychiatrists would call a state of

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<sup>157</sup> See 1985.

disassociated hysteria. Whereas a psychiatrist would therefore want to suppress this condition, the Fon priests and priestesses (Hogons) actually encourage and ritualise it. This provides both oracular information, and socially acceptable forms of therapeutic catharsis for those who periodically need to let their hair down and escape the normal rules and iniquities of society.

A key feature in all the Vodou shrines is percussion, as it is the drum rhythms and songs that actually increase the ritually dramatic performance "intensity factor"<sup>158</sup> that helps trigger possession and to some degree determines its particular possessing spirit. For each deity has its own special dance-rhythm, dance-drama and song lyric which puts the participants into an expectant state of mind. We can explore this idea more thoroughly by looking at the Voodoo cult in Haiti, which has retained all the pertinent African features.

In Voodoo ceremonies, the priests (houngans) and priestesses (mambos) employ three drummers to establish the distinctive Beat of the deity or loa to be called. The lead drum is played by the master-drummer, whose job is to enhance or initiate a mental state of possession through a process known as rhythmic entrainment<sup>159</sup>.

The actual technique is for the master-drummer to look out for any dancer who begins to tremble or looks fidgety and oppressed. He then literally drums the spirit into that person; by building up a drum improvisation around the swaying motion of the semi-entranced dancer – and then suddenly stopping in mid-phrase, leaving the dancer confused. This process of building up and releasing tension is repeated until in one moment of extreme bewilderment the dancer in question becomes so disorientated that he or she loses all ego-control.<sup>160</sup>

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<sup>158</sup> Expression used by the well-known Ghanaian ethnomusicologist J.H.K. Nketia.

<sup>159</sup> Entrainment occurs whenever a strong vibrating or oscillating system captures another connected secondary system which also begins to vibrate, although not necessarily in exact accord with the stronger system. This, therefore, is not a resonance effect where the secondary system vibrates at exactly the same frequency as the primary one.

<sup>160</sup> The conscious ego is called the "big good angel", and is one of two souls that voodoo practitioners believe everyone carries within them.

It is at that moment that the musical beat and its associated deity is able to jump into the psychological vacuum and “ride” the person as a “Divine Horseman”, as Maya Deren puts it<sup>161</sup>. The dancer then becomes intensely excited and spins like a top whilst the face remains mask-like and abstracted. In this state, which can last from a few minutes to several hours, the dancer can perform feats which would normally be quite impossible. An old dancer can move like a youngster while wounds can be inflicted without pain. Occasionally, however, the entranced dancer calls the tune, producing a new spiritual archetype to which the drummers have to respond by producing a new and suitable Beat.

In contrast to “hot” Vodun or Voodoo the “cooler” aspect of the Fon religion is Fa divination; also known as Afa amongst the Ewe and as Ifa in Yoruba-land.<sup>162</sup> This complicated system takes about ten or fifteen years to learn, and is based on the adept throwing sixteen two-sided cowrie shells (or palm or kola nuts) to produce one of 256 possible permutations or Du. Each Du is associated with a specific deity, an oral body of legend, and hundreds of proverbial poems (Ese) which throw light on the nature of the divination. Thus, while the diviner is ostensibly limited to one of 256 possibilities for each throw, he can, as folk psychologist, use his knowledge of these Ese poems and of the patient to decipher the finer issues involved. The more he knows the greater his ability to assess the client’s destiny or Fa. Incidentally, and in connection with the topic of multiple souls discussed earlier, it is the self-knowledge obtained through Fa divination that reveals the fourth Sekpoli soul to the Fon elder.

## *Conclusion*

To play polyrhythmic music and to manage polytheistic belief systems a person needs poise. This even-keeled stance is epitomised by centred master performers and serene priests, priestesses and elders. They have all attained the mature

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<sup>161</sup> This is the title of the book (1970) by this American anthropologist and dancer.

<sup>162</sup> See Herskovits (1938) and Abimbola (1972).



discipline to harmonise the silent and the overt, the inner and the outer; and to combine multiple roles and multiple perspectives, including those of “cool” contemplation with “hot” catharsis.

## Theme Eight: Freewill and Determinism

As noted in Chapter One, African master performers know how to rhythmically innovate: by tapping into the swinging gaps within percussive patterns, by re-arranging the permutations of intersecting polyrhythm and by continually altering their angle on the Beat. In short, they know how to even-up stability with novelty, convention with spontaneity, the cohesive with the schismatic and the old with the new. Indeed African and African American music and dance is known worldwide for its improvisary nature.

However, when turning to the traditional African life in general, another view has been portrayed by European social scientists: that pre-colonial Africa consisted of communal societies that suppressed individualism, were kept in check by repressive ritual taboos and were ruled by undemocratic chiefs and kings.

Although these features were most certainly a fact in old Africa there were many ways that people could express themselves freely, could make changes, could choose alternatives and generally find an individual voice. In fact some of these creative modes have been touched upon already in connection with African ritual life. An obvious one is the ceremonial taboo breaking and ritual license that goes on during times of transformation. Another stems from the fact that polytheistic religions present a panorama of cults and religious paths that are not mutually exclusive. Furthermore, the sacrifices, supplications and libations that traditional Africans have to make to their gods also imply that it is the worshippers who keep the gods alive. If they stop worshipping the god, or rather the demigod, it literally dies<sup>163</sup>. Furthermore the demigods are often localised in the natural features of the landscape, so that one can literally vote with ones religious feet by moving away from the particular mountain, stream, or locality the deity is thought to inhabit.

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<sup>163</sup> Or the demigod disappears into the nebulous god-head of a supreme creator who is of course immortal, but who is distant and generally unconcerned with the day-to-day goings on of the world.

Earlier in this chapter the twin “hot” and “cool” religious approaches of possessional cults and divination cults were discussed: both of which involve a level of freedom. In the case of dance possession this is obtained through emotional catharsis and tapping the unconscious and sometimes-repressed aspects of the entranced person<sup>164</sup>. In the case of more tranquil forms of divination, such as Fa or Afa, it is the destiny of a person that is revealed. However, it should be noted that the African notion of destiny does not involve an immutable predetermined fate, but rather a potential one from a range of possible life situations. Fa does not predict the precise future but provides the disposition of the present and the choices that are currently available to a client<sup>165</sup>. Indeed, William Bascom (1969) compares Afa to the psychological Rorschach inkblot test that draws out a patient’s motivation and so is helpful for psychological interpretation and assessment. Afa provides the same service for the Fon diviner who is also a folk psychologist.

At this point we will turn from religion to the area traditional African socio-politics where there were democratic mechanisms of various kinds. One, found in small-scale communities is the village gathering or “moot” in which people are given a voice through consensus rather than the Western democratic system of fifty-one percent and first to the winning post. Another is the tolerant stance of some traditional African leaders to settling personal differences that range from full blood feuds to musical contests and duels<sup>166</sup>. Others egalitarian arrangements which we will turn to in some details below include decentralised “segmental” political systems, checks on the power of chiefs and kings, the anti-authoritarian potential of youth associations and secret societies, and the use of witchcraft accusations as a social levelling mechanism.

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<sup>164</sup> A usually quiet person can become wild, a sober one seemingly intoxicated, women can behave like a man and vice-a-versa.

<sup>165</sup> A non-deterministic notion of destiny or fate similar to that of the old Chinese system of divination known as I Ching.

<sup>166</sup> For instance the Ewe of Ghana are famous for there poetic duel known as “halo”.

### *The African Socio-Political Realm: Checks, Balances and Polycentrism*

Indigenous African socio-political structures are usually grounded in lineage systems, which are based on the ritual obligations between members of the same extended family or clan who are all descended from a common ancestor, culture hero or mythical totem. Sometimes clanship is the only basis of social and political authority. Therefore they are not run by chiefs and kings<sup>167</sup> but rather by lineage elders who authority comes from them being closest to the ancestral founder. Besides this cohesive or centripetal authority of the clan elders there is, however, an opposing divisive or centrifugal tendency. This is produced by the constant schisms of extended families as they grow in size, split and become new clans. There is, therefore, a permanent state of dynamic equilibrium between the genealogically older and the more youthful clans, each checking the power of the other in an arrangement anthropologists call "segmental opposition".

This segmental tension between cohesive social forces and schismatic ones is often presented in religious terms. For instance the elders and priests of the dominant clans may control ancestor-worship but other clans command the earth cults and anti-witchcraft shrines. This is the case for the Tallensi people of Northern Ghana<sup>168</sup> who are divided into two major clans or moieties. The Namoo clan regulates the rains and ancestor-worship and supplies the Tallensi chief or Na'am. The other called the Tales clan looks after the earth-cult. Neither can operate without the other and so neither can gain complete control of Tallensi society; a symbiosis celebrated annually in a joint festival.

Another type of segmental arrangement, which Charles Keil<sup>169</sup> calls "polycentric", is that of the Tiv of Nigeria. In this case, ritual commitments to one's mother and father lineage cut

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<sup>167</sup> These small-scale societies run by councils of elders are known as de-centralised or "acephalous" ones.

<sup>168</sup> See Meyer Fortes (1945).

<sup>169</sup> See Keil (1979).

across and check each other. A similar division of ritual power was noted earlier in the case of the Akan speaking peoples of Ghana who obtain different ritual and inheritance obligations from the Ntoro spirit of their father/patriclan and the Mogya (blood) spirit of their mother/matriclan. Indeed for the coastal Fante subgroup of the Akan, patrilineal and matrilineal inheritance is so evenly matched that it is known as a "double descent" system.

Even in the case of the centralised societies of Africa, where heads of dominant clans become paramount chiefs, kings or queens, there were ways of curtailing their jurisdiction. For a start kingship in Africa was not usually inherited dynastically, but was rather rotated amongst various royal clans. Then there sometimes were (and still are) specific ceremonial times when the public can condemn a chief. One such case is the week of abuse permitted during the annual Apo Festival of the Brong (an Akan subgroup) of people of the Brong-Ahafo region of Ghana, which is dedicated to their god Ntoa. Furthermore there were often institutional checks on the centralised power of kings. For example, the power of the Ashanti (Asante) king was curtailed through the government administration being divided into three distinct spheres, each with its own jurisdiction, regalia and state emblem. Whereas the Golden Stool represented allegiance to the king (Asantehene), fiscal affairs and the diplomatic corps were quite separate and were symbolised by the Golden Elephant Tail and Golden Axe respectively.<sup>170</sup>

In many African societies it was also common to find alternative power-bases to that of the royal court and clan: in the form of trade guilds, age-set associations and secret societies. Professional trade guilds include those of blacksmiths and of musicians. Blacksmiths were feared for their magical alchemic powers and because they could turn ploughs into weapons: and therefore were separated from the rest of the village or town, living and working in their own quarters. Musical guilds include the Yoruba praise-drummer associations, the jalis or griots of Mali, Senegambia and Guinea and the goje

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<sup>170</sup> See Wilks (1996).

one-stringed fiddle players of Dagbon in Northern Ghana: all of whom were useful but feared by traditional authorities, as they could subtly undermine as well as praise.

Sometimes there were special ways to openly criticise a chief. For instance the Fante have a scraper instrument called a *dudu*<sup>171</sup> that is normally used by children, but in the hands of a grown man could be openly used to publicly complain about a chief.

The youthful age-sets of Africa also had the right to ridicule a chief, king or other "bigmen". Age-sets comprise groups of men or women who are initiated into adulthood at the same time and thus form close ties throughout life that are not based on lineage commitments, but rather on generational and neighbourhood ties. These organisations are the basis for all kinds of traditional institutions: including secret societies, warrior companies and women's market associations. These often utilise ridicule and satirical songs to warn wrongdoers and therefore act as a social control mechanism against the political power of the chiefs and other bigmen. This was the case with both the male Tiv age-sets and Akan Asafo companies, which were not only used in warfare but also in opposing corrupt or unpopular chiefs. They would first warn these despots through song and later, if need be, drum them out of town or even kill them. A feminine example of age-sets are the Mikiri market associations of Igbo women which, as mentioned earlier, stood up to the British supported "warrant chiefs" during the Aba Riots in Eastern Nigeria in the 1920's.

It should be finally pointed out that in traditional communalistic societies undue concentrations of power or wealth were often thought to stem from the use of witchcraft and sorcery,<sup>172</sup> particularly within the extended family and clan. For instance if the clan heads of the Tiv became too wealthy they were always accused of using evil magic or "tsav".<sup>173</sup> This is why many anti-colonial revolts by the Tiv against the British and their warrant-chief stooges took the form of anti-witchcraft

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<sup>171</sup> Composed of a notched stick and two small seed cases that act as scraper and as resonator.

<sup>172</sup> Evans-Pritchard (1937) did pioneering work on this topic in East Africa.

<sup>173</sup> See Keil (1979) and L. & P. Bohannan (1953).

riots. Ironically in this case, Africans saw Christian whites as supporters of “witches”.

Anti-witchcraft movements have also occurred elsewhere in Africa in a less confrontational way. In Ghana, for instance research by Margaret Field, Hans Debrunner and Patrick Twumasi<sup>174</sup> has shown that the proliferation of anti-witchcraft cults in the south of the country from the early twentieth century is partly a result of the emergence of a wealthy indigenous capitalist class based on the European cash-crop economy. Their sudden power, wealth and aggressive individualism were equated with witchcraft.

To conclude this topic of polycentric African socio-political organisations let me paraphrase the historian Terence Ranger.<sup>175</sup> He believes that far from having a single “tribal” identity, Africans traditionally move in and out of multiple identities, defining themselves at different times to their chief, to their special cult, to their clan, age-set or professional guild.

### ***African Creativity in the Modern World***

It is this polysidedness and capacity to juggle many variables that helps Africans to successfully adapt to cultural change: which includes incorporating new ideas from the West. Contemporary African popular music, for example, may use modern instruments but can remain grounded in local rhythms, tunes and dances.

This creative evening-up of black and white, old and new, imported and indigenous does not, however, only apply to the performing arts. African “tribal” or ethnic associations have been transmuted into urban self-help organisations, age-sets have become modern credit clubs and spiritual healers and herbal doctors contribute to the modern health services. Then there are the thousands of separatist or African Independent Churches<sup>176</sup> which, although Christian, display many characteristics of traditional religion: dancing, clapping and

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<sup>174</sup> For Field see 1960, for Debrunner (1959) and for Twumasi (1975).

<sup>175</sup> See Eric Hobsbawm and Terence Ranger (1986: 248).

<sup>176</sup> Zionist, Spiritual, Apostolic, Aladura, Ethiopian, Charismatic, etc.

drumming, women priests, divination, spiritual healing, possession (i.e. by the Holy Ghost) and the exorcism of witches.<sup>177</sup> Since the late 1970's these churches, together with the African Pentecostal churches, have also incorporated local popular dance-music into their worship. This, incidentally, has introduced many African women into popular entertainment for the first time, for who can prevent their daughter joining a church band.<sup>178</sup> Moreover, in the past many of these separatist churches played a part in the rise of African nationalism and today they play a role in battling urban anxiety, providing new urban social networks and helping create a modern African identity.

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<sup>177</sup> For some more information on some examples of these modern trans-cultural African features see Kenneth Little (1965), Assimeng (1981), and Baëta (1962).

<sup>178</sup> In Ghana this synthesis of local popular and church music is known as "gospel highlife" and in since the 1980's it has become dominated by women singers.



## Theme Nine: The Participatory Mode – The Sacred Community

As we saw in the First Chapter, traditional African music making involves dancing, clapping and singing audiences as well as instrumental performers. Everyone around is involved in the event, from master-drummer to young musical apprentice on cow-bell, from members of the chorus to the child strapped on its dancing mother's back. Unlike the West with its separating stage, passive audiences, detached observer and mediated formats (record, CD, video, TV) everyone is drawn in face-to-face into the African musical communion, the open dance space, the ritual drama, the "theatre-in-the round".

In the wider African context we have in this chapter already come across the participatory mode in various forms. One important example of this is that African customarily worship nature,<sup>179</sup> rather than attempt to dominate, master and subjugate it, as has been the scientific European approach since the time of Francis Bacon.<sup>180</sup> This religious African sense of participation in nature is heightened by the belief that the sky, the world and its plants, animals and human beings contain the same universal "animating" divine-force, which links up physical things spiritually, magically and astrologically. There is therefore no separation between the heavens and earth, the spiritual and material, the body and the mind; as is typical of the Western Judaeo-Christian and scientific view.

Another aspect of this participatory African mode is that personal growth and maturation is treated as a life cycle divided

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<sup>179</sup> This also has ecological implications. In Southern Ghana, for instance, farming and removing bushes and trees right down to the river's bank is thought to incur the wrath of the water spirits, but this taboo also prevents farmed soils being eroded and washed into and silting up rivers. It is likewise a taboo to cut down the trees in traditional religious groves, so that with today's massive deforestation these so-called "fetish" groves act as small primary forest and animal reserves.

<sup>180</sup> This renaissance English scientist broke with the ancient Greek and medieval idea that knowledge was for the contemplation of nature.

into stages heralded by rituals related to birth, puberty<sup>181</sup>, adulthood, marriage and old-age. Everyone therefore has a good chance in life of passing through all these stages from the status of small child to respected matron or big man. In the Western system there is a tendency for one to be permanently stuck at one point in this life cycle: forever a "small-boy" born into a working-class family or forever a "big-man" born into a rich family with a silver spoon in the mouth. Of course the Western capitalistic ideal is one of achievement, merit and social mobility: from rags-to-riches for any person. But as statistics have shown, since the late twentieth century, global wealth is becoming concentrated into the fewer and fewer hands of a small number of families and multinational companies.

We have also noted that although traditional African societies follow the diurnal, lunar, solar and agricultural cycles, they are not constant slaves to external mechanistic time: as are Westerners with their clocks and notions of wasting time, killing time, time is money and time-and-motion studies for factory efficiency. "African time" is more subjective, flexible and accumulates as one grows older and hopefully wiser. This African notion of an "accumulated time" that can be gathered as compared to Western linear time that is used up and "spent" will be returned to later in the book.

The Western nations pride themselves in their participatory ideals of democracy, free enterprise, merit and social mobility, and denigrate pre-industrial societies as taboo ridden, ritually repressive, communalistic and anti-individualistic. As we have seen taboos can be ritually broken in certain African ceremonies and on certain days. Then there are socio-political mechanisms that traditionally provide a voice for African people: such as the village moots, checks-and-balances on power, and the segmental and polycentric foci of authority. Indeed, the participatory democratic ideals of the West are now in question, with voter apathy, rigged elections, the disproportionate media access of the already powerful, the principle of winner as first past the

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<sup>181</sup> Puberty initiation rituals, as noted elsewhere, are also the basis of the male age-sets or warrior associations that are open to all youngsters of the same age irrespective of lineage, and play such an important role in traditional politics.

post<sup>182</sup> and that people only get to vote for a new government every few years.

Yet another aspect of the African participatory mode, not discussed previously, is that of gift exchange. In the capitalistic West, with its commodification and cash nexus, the transfer of goods for money creates no obligations (except the fact of possession) between the buyer and seller. Africa did traditionally have its own forms of money<sup>183</sup>, and special markets and days for such straightforward utilitarian exchange. There was also, however, the important principle of "gift exchange" that creates networks of mutual responsibilities and relationships that went beyond the economic one. Giving a gift created a reciprocal obligation for the receiver. Therefore, for instance, a poor person could put a chief in debt by giving him a gift. Furthermore there were social arrangements whereby gifts were passed from person to person in one direction whilst mystical and magical prestige moved in the other.<sup>184</sup> This conversion of gifts into high status was taken to its most extreme conclusion in the "potlatch"<sup>185</sup>, a form of conspicuous destruction (rather than conspicuous consumption) in which the gifts and wealth collected by an important person were ceremonially destroyed, thus elevating that person's socio-ritual status even more. In some cases there were competitions to see who could destroy more and thus become higher in esteem. During the 1920's cocoa boom of Southern Ghana, for instance, a neo-traditional music known as "sika bewu apere" (money's death pangs) appeared during the performances of which wealthy Ghanaians

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<sup>182</sup> In countries where there is non-proportional representation a 51% win means 49% of the population loses political power. This is quite different from the African system of consensus in which hours of palaver are spent in order to get the bulk of the people at a moot, or court, or market association or age-set meeting to agree. A 49% disagreement would be an unthinkable result of such a meeting.

<sup>183</sup> Cowry shells, iron rings and rods, beads, etc.

<sup>184</sup> The Samoans called this mystical esteem "mana" whilst the double cyclical exchange of goods and obligations of the Trobriand people (also Pacific Islanders) was known as the "kula".

<sup>185</sup> This potlatch system was quite common in pre-industrial societies in areas of abundance fish and wildlife. The word comes from the Kwakiutl Native American of the north-west American seaboard whose most important members would make a bonfire of all the canoes, furs and cloths they had acquired.

engaged in lavish displays of wealth and the open (and quite illegal) destruction of British currency notes.<sup>186</sup>

These participatory religious, socio-political and economic modes are all part of an old and pre-industrial communalistic way of life that pioneering Western sociologists<sup>187</sup> used as a base line for their classification and historical sequence of societies. They called the small-scale ritually oriented societies "Gemeinschaft" ones based on "pre-logical" thinking, on kinship based "organic solidarity" and on informal face-to-face "primary relations". They compared this to large-scale Western secular individualistic "Gesellschaft" societies based on "mechanical solidarity" (division of labour) and "secondary" relationships of a formal and rational-bureaucratic kind. Of course the implication of this schema was to show that the old and so-called "primitive" social systems had been superseded by those of the "advanced" Western ones: culminating in the "protestant ethic"<sup>188</sup> and bureaucratic structure of the modern nation-state typified by thrift, specialisation, self-discipline, deferred gratification, merit and impersonal planning.

In spite of all these bold rational and "civilised" ideals of doing away with personalised socio-economic networks<sup>189</sup> these still persist or are being continually re-created in industrial nations: as unofficial trade unions, "old-boy" business networks, new religious sects, charismatic cults, street carnival, football crowds, youth subcultures, neighbourhood associations and street-gangs.

Nevertheless the plans of detached scientists, remote bureaucrats, and lofty city architects continue to be in the direction of the impersonal, the regimented and the technological. As will be returned to again at the beginning of the next chapter on modern Babylon, this has lead to urban

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<sup>186</sup> See James Anquandah's article "Ghana's Heart Beats with Music" in *The Ghanaian Mirror* January 11<sup>th</sup> 2003, p. 18.

<sup>187</sup> For instance Emile Durkheim, Ferdinand Tönnies, Charles Cooley, Lévy Bruhl and Max Weber.

<sup>188</sup> This was part of a title of a book by Max Weber called *The Protestant Ethic and the Spirit of Capitalism*.

<sup>189</sup> Bureaucrats consider these forment corruption, graft and nepotism.

sprawls, mega-metropolises, concrete jungles, psychological anomie, youth alienation, impoverished ghettos and environmental pollution. Human settlements no longer live with nature but are pitted against it. Modern people no longer worship nature but plunder it as a raw material.

Warfare is not usually considered a participatory form of expression, except maybe for the soldiers or warriors involved. Indeed, small-scale African and other pre-industrial societies recognised thus through religious taboos that kept warfare and normal social life quite separate. As some anthropologists have demonstrated,<sup>190</sup> although these societies did have periods of war, these are considered abnormal occurrences that upset natural sociality. This explains, for instance, why young warriors returning from war full of blood-lust were treated as being ritually polluted, and were kept isolated and had to be spiritually purified before being allowed to return to normal life.

However, in the West there has been the most extraordinary turn-around on the nature of warfare over the last few hundred years. Modern industrial war, rationalised by military theorists such as Clemenceau and others, is now treated as a continuation of politics by other means, so that it is quite justified as part of military strategy to bomb and destroy civilian communities. In other words the old distinction between warfare and normal social civil life has been lost. As a result we have had a century or more of world wars, guerrilla wars, civil wars, asymmetrical wars, and the constant updating of weapons of mass destruction and their "overkill" capacity. A corollary to the fact that the natural state of modern mankind seems to be that of un-remitting warfare is that soldiers returning from such normalised wars<sup>191</sup> straight back into civil society, bring with them their blood-lust, their shell-shock, their spiritual and actual pollution (agent

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<sup>190</sup> See e.g. Simon Harrison's 1993 book on Melanesian warfare entitled *The Mask of War*.

<sup>191</sup> Even though one million people died in the Vietnam War the United States never actually declared war on that country. Today massive bombing by the super-powers is done for wars that are meant to keep the peace, to support corrupt regimes, to continue civil wars, to preempt supposed wars: and finally today to prevent terrorism which, without dealing with its root problems, will give the super-powers the justification for an eternity of warfare.

orange, depleted uranium, etc.), and Gulf War and other newly discovered psychotic symptoms

Ironically, the question of warfare was one of the main justifications for the creation of the modern Western nation-state in the eighteenth century, as political thinkers of the time<sup>192</sup> believed that without the central state human beings would descend into a natural and permanent state of “primitive”, brutish war. However, warfare in the so-called “primitive” societies of Africa and elsewhere was rather considered an “abnormal” state of basically peaceful social communities; whereas for the modern nation-states it has become the problem of allowing peace to break out of a “normal” and permanent state of industrial-technological warfare.

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<sup>192</sup> Such as Thomas Hobbes, John Stuart-Mills and John Locke.

# SECTION TWO: THE SPACE AND INFORMATION AGE

## CHAPTER THREE

### MODERN BABYLON: THE EMERGENCE OF INDUSTRIAL BABYLON AND ITS MECHANISTIC VISION

The modern technological world is one of increasing polarisation and strife; whether city against countryside, rich against poor, young against old, man against woman, science against the humanities. The quest for security and efficiency through division-of-labour has rather led everyone into over-specialised, disconnected and even antagonistic paths.

Politicians quarrel, the masses are divided, hi-tech and holy wars burst out, the wealthy plunder the earth, nature revolts, economic miracles collapse and the experts can hardly communicate across their various disciplines. This is the runaway confusion that Rastafarians and reggae musicians refer to as "Babylon" – a poetic expression used as the title of this chapter.

Today we are in a Global Village that has reached the moon and planets, but world leaders offering us ultimate protection have ended up giving us ultimate global annihilation; through either warfare or industrial pollution. Furthermore, much of their power has been lost to multi-national companies who owe allegiance to no one, not even a nation-state or voting population. These impersonal bureaucracies are a law unto themselves, and they grow according to haphazard market

forces rather than to social needs. Now they are busily genetically coding everything so that they will be able to copyright, clone and modify the food we eat, and eventually us too.

The result of this out of control development is that modern economies create slums and urban decay whilst the miracles of medicine lead to a population explosion. Consequently, two thirds of the world is under-nourished whilst the West produces beef mountains, milk lakes and junk food in the name of stable economies. Moreover, satellites and instant global link-ups are ironically tearing the world apart, for every historical or parochial problem has become the latest present-day crisis, brought into every home by radio and television, where it creates guilt, hatred, copy-cat crimes, Attention Deficient Disorders or listless "couch potatoes".

Although humanity may not be coming together ideologically or spiritually, on the material level people are being crowded together like rats into urban ghettos, high-rise gulags and suburban boxes. George Orwell's nightmarish science fiction vision of 1984 has come to pass: video cameras watch the streets and shopping malls, spy satellites orbit the earth and security is now computerised. People are being turned into faceless ciphers: production-line workers, bureaucrats, workaholics, drug addicts, welfare recipients, prison inmates, or shallow television celebrities. Living neighbourhoods and communities are ripped apart. The extended family goes nuclear, or even single parent, as we head towards test-tube babies and state orphans. Youth is worshipped, grandparents are shunted into old-age homes, senior citizens congregate in dormitory towns and the fabulously rich dabble in immortality with face-lifts, organ transplants and cryogenics.

As a reaction to state control, the global new world order and technological homogenisation, individuals make a desperate bid for uniqueness and difference. Indeed, ours is the age of the rugged individualist, competitive ethics, eccentric cults and fashions, the struggling romantic artist, the loner of Hollywood myth – and in extreme cases the terrorist cell.



It is this increasing social solitariness and privatisation, polarised against an impersonal and dehumanising backdrop, that has helped produce the rootless and helpless feeling of anomie and angst currently plaguing the modern world. The right hand is turned against the left; matter is pitted against spirit, anarchist's battle with conservatives, whilst suicide, hard drugs, road-rage and random murders are on the increase. "Everything go scatter," as the famous Nigerian musician Fela Anikulapo-Kuti once put it on one of his Afro-beat tunes.

Despite all the achievements of modern civilisation, things have clearly gone askew. To find out why it is first necessary to look back to the origins of European industrial society and culture that have their roots in the Graeco-Roman and Judaeo-Christian traditions. And we first turn to ancient Greece, which stood at the crossroads of Europe, the Mediterranean, North Africa and the East.

It was in sixth century BC that the first recognised Greek scientific and philosophical schools were founded. These early schools saw no dualist contradiction between the physical and mental. Indeed, Thales and Anaximander of the Milesian school coined the word "physics" to mean the essential nature of things both spiritual and material. For them the material world was permeated with a universal spiritual breath or Pneuma which the contemporary Pythagorean School equated with Logos or divine logic. This belief is much in line with what was discussed in the previous chapter in connection with a universal animating spirit found in many ancient and African religions.

However, in the fifth century BC there was a split in Greek thinking about the essential nature of things, that moved from seeing spirit and matter as being complementary to the view that they were in direct opposition. Some followed Parmenides, who believed the physical or corporeal to be a fleeting illusion, behind which lay the permanency of the eternal spirit. This idealistic notion was opposed by the followers of Heraclitus, who saw everything, material or spiritual, to be in a continuous state of flux. Permanence was therefore rather a deception produced by the dynamic interplay of opposites. One could say that Heraclitus expressed "hot" ideas while Parmenides was

searching for a “cool” underlying plan within multiplicity. These two philosophies were considered irreconcilable.<sup>193</sup>

This oppositional dualism of spirit and matter was continued by the Greek philosopher Plato who believed that since nothing seemed to last in the world of the physical senses, stability could only be found in such abstract ideas as Beauty, Harmony, Justice and Truth, which were themselves imperfect human reflections of universal ideals or “Essences.”<sup>194</sup>

The Greek heritage was kept alive during the Pax Romana where it mingled with Jewish ideas in the metropolitan cities of Rome and Alexandria. Monotheistic Judaism and its Christian offshoot were only two of myriad religious cults, which flourished during ancient Roman times. However, unlike the mystery religions that focused on fertility and the possibility of rebirth in the here-and-now, these two Semitic faiths believed in a straight march of history: the future Jewish promised land and the once-and-for-all crucifixion, resurrection and second coming of Christ.

After Emperor Constantine’s conversion to Christianity in the fourth century AD Christianity became the dominant religion of Imperial Rome, from whose ashes grew the Holy Roman Empire.<sup>195</sup> In early Catholic Europe the dualism of Plato was taken to extremes, for when fused with the Judaeo-Christian concept of original sin, it led to the otherworldly notion that the material and sensual world was fundamentally corrupt. Consequently, it was only by the rejection of the flesh that one could attain salvation in heaven. Worship through dance

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<sup>193</sup> An attempt to reconcile these two opposing Greek theories of free-play versus fixed forms was made by Democritus, who postulated a universe composed of numerous tiny indivisible “atoms” in a constant state of motion. For him it was the immutable atom that represented the rock-bottom of things, but at the same time they were in a permanent state of flux. This early atomistic theory was swept aside for almost two thousand years by two later Greek philosophers: namely Plato and Aristotle.

<sup>194</sup> The philosopher Aristotle, being of a more practical nature than Plato, called the essences of things their “Form”: and turned his encyclopaedic mind to analysing natural forms in an experimental and inductive way.

<sup>195</sup> This is why Western European Christendom emerged with Latin as its *Lingua Franca* and the Pope in Rome as the head of a rigid social and spiritual hierarchy of kings, cardinals, knights, priests and serfs: quite different from the earlier and more egalitarian Christianity of the Roman slaves.

was forbidden, priests had to be life-long celibates and women were forbidden to touch the sacraments.

These anti-sensual and anti-feminine developments occurred partly because of the fear of old pagan fertility practices that involved music, dance and the worship of female deities. Christian misogyny was also a result of the patriarchal Jewish tradition and the fact that when Christianity became the state religion of Imperial Rome and its army, the role of women was downplayed.<sup>196</sup> Indeed, except in the seclusion of nunneries women were not even allowed to sing in church choirs. Boys and castrated men sang their parts.

In this Western European interpretation of Christianity everything, even their Gothic cathedrals, seemed to want to leave the soiled earth and reach for seventh heaven. Plato's otherworldly notions, preserved in Latin texts, reigned supreme and the more down-to-earth ideas of Aristotle were almost forgotten. That is until the twelfth century, when original Greek manuscripts preserved by the Muslims began to percolate into Europe from Spain and North Africa, re-awakening the spirit of empirical inquiry in Europe. Crusaders also brought back Muslim ideas from the Holy Land. Furthermore, after the fall of Constantinople to Islam in 1454 there was an exodus of Greek-speaking scholars out of Asia Minor and into Europe. They brought with them new ancient Greek knowledge including the writings of Aristotle. This, when combined with Arabic sciences, Indian mathematics and the invention of the printing press, led medieval Europe into the Renaissance.

Besides the empirical methods and scientific ideas of Aristotle being re-discovered during the Renaissance, the influence of this new knowledge was felt in many other ways. The naturalistic and symmetrical art and architecture of ancient Greece influenced the work of Michelangelo, Titian and Leonardo da Vinci, whilst the ancient atlases of Greek sailors

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<sup>196</sup> Another reason for the demotion of women was that, unlike the fertility cults, there was little regard for the procreational function of women in millennial Christianity that preached the immanent destruction of mankind on the Day of Judgement. Except for the Virgin Mary and a few female Saints, women were therefore equated with evil and those associated with surviving pagan earth cults and herbalism were persecuted as witches.

helped spark-off voyages of discovery. This was followed later in Italy by the re-creation of ancient Greek theatre with its fusion of drama, dance and music.

The creation of “opera” as it was called involved, in turn, the development of the monodic style of music that highlighted the melody of a solo voice (or instrument) backed by subservient chords<sup>197</sup>. This replaced the earlier polyphonic counterpoint style that, having so many different voices going on at once, was unsuitable for the clear dramatic stage presentation of an operatic actor’s sung lines. It was, furthermore, this monodic<sup>198</sup> style, which laid the basis for the laws of functional tonal harmony (a topic that will be further discussed in later chapters). Moreover, just as monody focused on a single melody, so rhythm was simplified down to a single tempo and metre. Musical time had to move to the ticking of the newly invented metronome, fit into the regular bar-lines of the written score and follow the down-stroke of the conductor’s baton.<sup>199</sup>

The Renaissance and the Protestant Reformation<sup>200</sup> ended the hegemony of the Catholic worldview and paved the way for the scientific Enlightenment of the seventeenth and eighteenth centuries when leading European thinkers became fascinated by the rational and physical. The split between the spiritual mind and the material body that so fascinated ancient Greek philosophers and medieval theologians, therefore resurfaced again in scientific guise. It appeared in the body-versus-soul philosophy of the seventeenth century French mathematician Descartes who clearly separated the realm of the individual self or soul from that of that of the material world. However he avoided the problem of having to explain how these two oppositions related to each by treating the enigmatic inner

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<sup>197</sup> The chords and bass-line that harmonically backed an operatic voice (and later on the solo instruments of symphonic orchestras) was known as the “basso continuo”.

<sup>198</sup> Also known as homophonic (i.e. same voice) music.

<sup>199</sup> Indeed, the pre-occupation with melodic/harmonic laws was so great that for several hundred years drums all but disappeared from European art music.

<sup>200</sup> This started in 1517 when Martin Luther nailed his ninety-five theses to a church door in Germany, thus starting the Reformation and a more individualistic and populist approach to worship.

psyche as a “ghost in the machine”. He had little interest in the ghost and so built his Cartesian theory of knowledge on the tangible, which could then be logically classified, quantified and analysed. French “philosophes” who were atheists and materialists then took up his ideas<sup>201</sup>.

The European Enlightenment was a period of scientific absolutism when the sceptical philosophers and classical scientists of the period<sup>202</sup> believed that everything in the universe could be reduced to either a few elemental particles or measurable forces. Matter, heat and light were thought to ultimately consist of tiny, dense, indivisible atoms or corpuscles. These were inert but were influenced by the non-substantial forces of gravity, inertia and magnetism, which acted instantaneously on all of them, however far apart. These instantly acting invisible forces therefore provided a common time-scale for this universe of atoms.

Isaac Newton, Descartes and other classical scientists therefore believed there was single cosmic clock ticking away at the back of everything and an inflexible set of spatial co-ordinates for the universe.<sup>203</sup> In short a universal space-time grid. Furthermore, the research method they employed was setting up controlled and isolated experiments whose objective results could be recorded by detached scientist and neutral observers.<sup>204</sup> Another classical paradigm was Newton’s time reversal symmetry that suggested physical processes could move in exactly the same way backwards in time as forwards – a concept that led the French mathematician, Pierre Laplace, to claim that “given the

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<sup>201</sup> This dualistic split between the spiritual and material was even reflected in politics, with the modern nation-state (modelled on the French Republic) becoming secular; leaving religion a purely private affair.

<sup>202</sup> Newton, Lavoisier, Harvey, Volta, Leibniz, Dalton, Voltaire, Pascal, Linnaeus and other pioneering classical scientists.

<sup>203</sup> Their evidence for this was that when a massive pendulum swings to-and-fro it makes a circle relative to the floor every twenty-four hours. Knowing that the pendulum’s circular movement was a result of the earth rotation each twenty-four hours, the Enlightenment scientists concluded that the pendulum must be fixed to some unchanging and invisible cosmic grid.

<sup>204</sup> This is quite different from the earlier alchemical mode of experimenting in which “scientists” actually tried to ennoble their own souls whilst purifying base metals.

knowledge of the present state of every atomic motion, the entire future of the universe can be mapped out.”

The Enlightenment also applied rational and carefully controlled techniques to the arts. The laws of perspective developed during the Renaissance<sup>205</sup> were elaborated by artists such as Rembrandt and Vermeer who painted from a fixed point of view known as the “single eye of the beholder”. The equivalent of these visual laws for baroque and classical<sup>206</sup> art music was the previously mentioned monodic style and its harmonic/metric laws that constrained music to a single melodic line and fixed rhythmic bars.

At the same time that melodies and metres were being constrained the Elizabethan round-theatre gave way to the proscenium picture-frame stage that fully separated performers from audiences. Moreover, increasingly large and hierarchically organised symphonic orchestras evolved that had to be placed under of the control of musicians-cum-conductors. Indeed, during the nineteenth century symphonic orchestras became so enormously complex that they had to be run by specialist professional conductors.

During the nineteenth century technology and industry began to dominate all walks of European and American life. Science seemed to be on the brink of reducing everything down to immutable atoms and elevating scientific hypotheses to absolute laws. Consciousness on the other hand was thought to be an excretion of or ghost in the brain. Indeed, scientists following Laplace’s example, treated the whole universe as a vast machine whose working-parts, when experimentally isolated and analysed, could ultimately be totally understood and predicted.

Everything seemed to confirm the views of the classical science of the Enlightenment and nineteenth century: that the laws of nature (and even art) could be cut-and-dried, time was no more than the relentless ticking of a universal clock and space was something external and even frightening. Humanity

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<sup>205</sup> An early pioneer of perspective was the Italian painter Paolo Ucello.

<sup>206</sup> Which corresponded in time to the Enlightenment period.

was no longer the microcosm at home in the middle of the medieval astrological macrocosm, but an automaton on the fringes of an alien and lifeless void.

The following table shows some of the differences between the paradigms of the ancient and medieval world and those of the European Enlightenment

### **Table of Differences Between Ancient/African and Classical Mechanistic European Worldviews**

#### ***ANCIENT/AFRICAN MECHANISTIC EUROPEAN***

1) COMPLEMENTARY POLARITY	UNITARY ATOMS AND FINAL LAWS
2) RELATIVITY	FIXED HIERARCHIES. THE SPACE-TIME GRID OF NEWTON AND DESCARTES. MONODY AND THE LAWS OF PERSPECTIVE
3) HIDDEN SPACE	POSITIVISM MATERIALISTIC OVERSTATEMENT FEAR OF SPACE
4) HOLISM	SCIENTIFIC ANALYSIS REDUCTIONISM ARTISTIC FRAGMENTATION
5) CIRCULARITY	LINEAR TIME & HISTORICAL PROGRESS LINEAR READING OF SCORE-SHEET
6) DRIVING TOUCH OF ASYMMETRY	REDISCOVERY OF GREEK SYMMETRY NEWTON'S TIME-REVERSAL SYMMETRY
7) MATURE POISE	SCIENTIFIC OVER-SPECIALISATION CARTESIAN MIND/BODY DUALISM ART MUSIC DIVISION OF SONG/DANCE
8) FREEDOM & NECESSITY	LAPLACE'S MECHANISTIC DETERMINISM MUSICAL SCORE SHEET AND CONDUCTOR
9) THE PARTICIPATORY MODE	SCIENTIFIC DETACHMENT THEATRICAL ARTIST/AUDIENCE SPLIT

## REACTIONS AGAINST THE MECHANISTIC VISION

One of the earliest backlashes to the excessively arid, mechanistic and fatalistic view of classical science came from the Romantic Movement. This pan-artistic creed wanted people to get back in touch with nature, with the strange and exotic, with the so-called “noble savage” and with the pre-industrial past. It raved against what William Blake poetically called the “dark satanic mills” of industrialism; and the “single vision” of rational science<sup>207</sup>. Romanticism rather advocated a return to fellowship and folklore, focused on the subjective rather than objective and expounded the democratic rights and nationalist aspirations of the common man.<sup>208</sup> This artistic movement therefore partly represents an early artistic critique of the excesses of technology, positivism, rationalism and industrialisation.

However, from the nineteenth century the solid edifice of science itself began to slowly crumble and split apart at the seams. The proponents of whether it is particles or waves that are the primary stuff of matter began to argue amongst themselves. The idea of the inexorable march of scientific or any sort of progress, for that matter, was questioned by thermodynamics that suggested a universal inclination towards chaotic dissolution or entropy. Later on the solid atoms were cracked with their shards disappearing into energy fields and probability patterns. Meanwhile dimensions multiplied, Euclids’ straight-lines were bent, Newton’s space-time grid relativised and cosmic space and time enormously expanded.

The very first objections to the over-predictable classical picture of reality began to appear as early as the 1820’s, when light and heat (caloric) corpuscles were experimentally shown to be not discrete particles, but waves spread out in time and

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<sup>207</sup> The whole line of this poem is “May God us keep from single vision and Newton’s sleep”: i.e. the scientific rejection of the subjective, metaphysical and transcendental.

<sup>208</sup> It also stressed the importance of the emotional, heroic and unique nature of the human will, which culminated in the super-subjectivism of the German philosopher Friedrich Nietzsche who proclaimed that “God is Dead” and that mankind must learn to stand on its own two feet.



space. This breakthrough was followed in the 1860's by the work of the Scottish physicist James Maxwell who demonstrated that both electricity and magnetism are wave-like force-fields that radiate like ripples in a pond through a supposed super-fine imponderable ether. He realised that just as waves take time to move across water, so too a delay must occur in the movement of the forces of light, heat, electricity and magnetism through this "ether". Indeed they had a definite speed.<sup>209</sup> Therefore, these waves could not radiate out instantaneously and so could not act as a single time-reference for distantly scattered objects.

It was then that scientists first began to appreciate that when we look up at the night sky we are not seeing the heavenly bodies as they are at any exact moment, but are rather looking through a time tunnel. The huge speed of light makes the time lapse between source and eye insignificant for earthly objects. When the heavens are surveyed, solar light takes eight minutes to get to us from the sun whilst starlight can take thousands of years, or light years. Consequently, there is no single time-scale but rather an infinite number of local times, each dependent on the positions of and distances between the observer and the observed.

The Enlightenment notion of a single spatial framework also became similarly relativised in the 1880's. This began when the Austrian mathematician and philosopher Ernst Mach suggested that the circular movement or acceleration of the massive swinging pendulum referred to earlier, and indeed acceleration in general, was not fixed to an abstract and imaginary grid, but rather to the total mass of the universe. Thus, if all the stars and galaxies were to disappear, then space, as a framework for relative movement, would also disappear and the pendulum's circular motion would cease. This confusion stemming from scientific theories of there being neither a single universal space co-ordinate nor time referent was compounded by the experiments of Michelson and Morley. These proved that there was not even a universal medium or "ether" for light and other forms of electro-magnetic radiation to travel through.

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<sup>209</sup> I.e. 186,000 miles per second or 299,796 kilometres per second.

The disintegration of bedrock classical physics continued even further during the twentieth century. Solid matter seemed to completely vanish on close inspection and our astronomical vista expanded not only to the edges of this universe but to other possible multi universes as well.

Ever since Galileo first pointed a telescope at the night sky and Copernicus argued that the earth orbited the sun, mankind's view of its relative size and importance in the universe has shrunk as the observable heavens expanded. Indeed, during the early twentieth century the American astronomer Edwin Hubbard was actually able to measure its rate of expansion. This became known as Hubbard's Constant and calculations based on it suggest that the edge of the universe is expanding away from us so fast that star-light from it is never able to reach us. His Constant therefore puts a limit on our observable universe, which is of the unimaginable distance of about ten thousand million light years.<sup>210</sup>

So today we have come to realise that humanity inhabits an insignificant planet revolving around a sun which lies at the outer rim of a spiral galaxy containing millions of other stars, itself just one amongst millions of galactic super-clusters, in a universe we cannot even see the end of. Far from being in the middle of a secure cosmic stage, modern humanity has therefore been pushed to a small and astronomically insignificant corner of creation.<sup>211</sup>

While astronomers have vastly broadened our sense of space and time, modern physicists have shattered the inner core of the atom and discovered an inner complexity. This began to be

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<sup>210</sup> This is the distance that light travelling at 186,000 miles per second would travel over ten thousand years.

<sup>211</sup> Scientists also now know that our universe began around 12 to 15 billion years ago when space, time, matter and anti-matter exploded and inflated into existence. This "Primeval Atom" or "Fire-ball" spewed out clouds of hydrogen and helium gas which later cooled down and slowly coalesced through gravitational pull during a cosmic "dark period". Then light dawned again when these condensing gases ignited into the first generation of primary stars. Our own sun, however, is of a second generation of stars that are composed of the scattered debris of the more massive primaries in the centres of galaxies which, in their death-throes detonated as super-nova. Fortunately for us this debris contained the full range of elements required for biological life. So technically speaking human beings are thinking star-dust.

realised around the turn of the twentieth century when the Curies in France noticed that some heavy metal elements, like radium, far from being immutable, spontaneously decayed into radioactive rays. Then J.J. Thomson in England discovered that the indivisible atom consists of negatively charged electrons and positively charged protons. Lord Rutherford then added a lot of empty space by conceiving electrons as tiny particles circling in a subatomic void around a central nucleus of positive protons. Rutherford's "planetary model" of the atom was refined by the Danish physicist Niels Bohr who suggested that the electrons moved in several discrete shells or orbits rather than just one, with the more energetic electrons orbiting further away from the nucleus. Today the atom has become a particle "zoo" of over two hundred subatomic particles, quarks<sup>212</sup>, quantum gaps and force fields.

At the same time, as the mechanistic and absolutist foundations of the hard sciences were crumbling away, the tenets of historical, social and behavioural sciences began to be questioned. The various nineteenth century attempts by pioneering sociologists<sup>213</sup> to reduce all human behaviour to unitary laws of cause-and-effect gave way to comparative studies. These cultural and linguistic relativists,<sup>214</sup> as they are called, discovered that each society had its own unique but internally cohesive language and cultural system that structured reality into a distinct worldview or mind-set. Indeed, there were so many worldviews that social scientists became quite confused.<sup>215</sup>

In a like manner psychology emerged as a reaction to the superficial classical scientific views that humans are automata whose consciousness is a rational and objective excretion of the

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<sup>212</sup> Quarks come in six varieties or "flavours" with odd names like Charm and Strange and are held together by attractive forces called "gluons".

<sup>213</sup> Such as August Comte, Emile Durkheim and Herbert Spencer.

<sup>214</sup> Such as Benjamin Lee Whorf (1956) and Edward Sapir.

<sup>215</sup> It was in reaction to this ultra-relativism that "Structuralists" such as Noam Chomsky (1975), Lévi-Strauss (1968) and Ferdinand de Saussure attempted to reduce language and myth universal deep grammars and binary codes. A topic that will be discussed later in the Thematic Chapter Two on polarised tensions.

brain. Psychologists rather discovered fringe consciousness, the unconscious, multiple mind levels and complexes.

Even history became insecure when writers such as Gibbon, Toynbee and Spengler moved away from themes on the steady march of historical progress to studies of the rise and inexorable fall of civilisations. Moreover, the nineteenth century *laissez-faire* economies seemed to be sowing the seeds of their own destruction: as evidenced by the First World War, the Russian Revolution and the emerging anti-colonial struggle.

This break up of solid nineteenth century certainty also had a profound effect on European art. A new generation of novelists emerged, like Proust and Joyce, who presented their character's thoughts as a stream of disconnected consciousness. The French sculptor Rodin deliberately left works unfinished so that they appeared to be taking shape from the crude stone. In a similar fashion "modern" composers broke all the rules of classical music and purposely created songs full of discords and random numbers.<sup>216</sup>

This new iconoclastic mood was also reflected in paintings of the period. First came the French "Impressionists" Monet, Matisse, Degas and Renoir, whose aim was to catch the first impressions of a scene in terms of colour and light, rather than trying to represent solid substance by the use of perspective and derived planes. Debussy with his focus on momentary sound qualities rather than classical harmonic laws, was a musical equivalent. Following the Impressionists were the painters Cézanne and Van Gogh who distorted old planes and created new ones. Then came the ultra-relativism of Picasso and the Cubist movement that looked at a picture from several impossible sides at once, instead of from the fixed eye of the beholder. A musical parallel is found in the polytonal music of the early Stravinsky whose clashing keys in his "Rite of Spring" caused a riot at its premiere in Paris in 1913.

The "roaring twenties" and "jazz age" that followed the First World War saw a new emotionally super-charged artistic

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<sup>216</sup> Like John Cage, Karlheinz Stockhausen and Pierre Boulez.

movement surface called "Expressionism".<sup>217</sup> Expressionism tapped into the non-rational subconscious and launched a concerted attack on conventional logic which, its proponents argued, had led to the horrors of advanced industrial wars with its use of tanks, submarines, poisonous gas and the aerial bombardment of civilians.

All these artistic, sociological, linguistic and scientific "isms" of the twentieth century and the identity crises, paradigm shifts<sup>218</sup> and future shocks<sup>219</sup> that accompanied them, helped produce the philosophy of Existentialism. This movement that sprang up in the 1940's explored the ontological problems and psychological anxieties of too much choice and too little stability. In the existential novel, for instance, the central character is constantly trying to spin meaning out of thin air. This is why the neurotic hero or anti-heroes of Jean Paul, Franz Kafka and Albert Camus never quite seem to know what is going on and are continually doubting themselves: quite different from the certainty of the heroes of classic or romantic novels. Even Christianity turned existential in the writings of theologians such as Paul Tillich. Drawing on the earlier writings of Karl Jaspers and Søren Kierkegaard, religious existentialists attack the authoritarian aspects of Christianity and its law-making patriarchal god, looking instead for the divine in the existential "now" where faith is continually created and re-created out of doubt.<sup>220</sup>

So for many areas of twentieth century art and philosophy fixed rules and regulations have been subverted by the illogical, the indeterminate, the unconscious and by multiple frames-of-reference. All this contemporary century uncertainty and angst

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<sup>217</sup> This included the literary "Dadaism" of Max Ernst and Tristan Tzara, the "Surrealism" of Andrei Breton and Salvador Dalí, the "Abstract Art" of Paul Klee and the musical "Atonalism" of Arnold Schoenberg, Anton Weber and Alban Berg.

<sup>218</sup> A term invented by Thomas Kuhn (see 1962) to describe the sudden shifts or "revolutions" in scientific thinking.

<sup>219</sup> *Future Shock* is the title of A. Toffler's 1970 book.

<sup>220</sup> Another new anti-authoritarian trend in contemporary Christianity is Liberation Theology that pits itself against authority in the name of the suffering masses of the developing nations.

have helped foster an artistic back to roots movement which, like its nineteenth century romanticism predecessor, is drawing on ideas from the pre-industrial past to regain a sense of the wholeness and centrality of humanity.

This neo-romantic movement began at the start of the twentieth century when many artistic people became interested in the so-called primitive and tribal art that anthropologists and curio collectors had brought back from Africa, Oceania and the East. This influenced many modern painters<sup>221</sup>, with Picasso going through a Negro period and Paul Gauguin actually settling in a Pacific island to obtain inspiration.

Likewise the unpretentious musical style the French composer Claude Debussy's was affected by the polyrhythmic gamelan music of Indonesia, whilst Igor Stravinsky's ballet *The Rite of Spring* centred on pagan fertility rituals. This trend has been continued by more contemporary art musicians: such as Steve Reich, Le Monte Young, Terry Riley and Phillip Glass who all draw percussive and minimalist ideas from traditional African and Indian music. As discussed in Chapter One, another aspect of the artistic roots movement is the century-old Western fascination with the black popular dance-music of the Americas, augmented by the Afro-pop and the World Music craze of today.<sup>222</sup>

Another expression of this roots phenomenon in the contemporary world is a general Western interest in old and ethnic beliefs. Oriental religions and philosophies were introduced to Europe as far back as the nineteenth century by the Romantics and by Madame Blavatsky's Theosophical Society. Persian Sufism was introduced in the 1920's by Gurdjieff and Peter Ouspensky. Also from Persia came the Baha'i faith that embraces all world-religions as one. After the Second World

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<sup>221</sup> Such as Vlaminck, Matisse, Apollinaire and Modigliani.

<sup>222</sup> It should be recognised that African American popular music styles have also influenced Western art musicians over a long span of time: the ragtimes of Debussy; the New World spirituals of the Czech composer Antonin Dvorák; the jazz influence on America's Charles Ives and Aaron Coplan and surprisingly on the Russians Igor Stravinsky and Dmitri Shostakovich. And more recently the symphonic "Third Stream" fusion jazz of the German art composer Gunther Schiller.

War, Yoga and Zen Buddhism greatly influenced those young Westerners who followed the Bohemian, Beat and Beatnik lifestyles, or belonged to the bebop/modern jazz fraternity. The hippy and the flower power movements of the 1960's followed this with its Indian gurus, Chinese I Chin and macrobiotic foods, Native American inspired environmental Rainbow Warriors and astrological Aquarian Age. By then there was an international interest in organic farming, in the whole earth movement and in the Eastern martial arts (e.g. by Bruce Lee) which are grounded in the ancient Chinese Taoist harmony of opposites: turning one's opponents strength into weakness.

A quite different search for holism than the romantic roots one discussed above comes from the Post-Modernists. This movement began in France in the late 1960's and considers all totalising theories (scientific or artistic) that try to explain everything as too rigid and compartmentalised. They therefore oppose the codes and master narratives of central authority figures, such as the great composer or writer whom, they claim, only present things from a fixed point of view: usually Western and male. Post-Modernists, instead, put emphasis on ideas and projects which are interdisciplinary, have blurred distinctions, or juxtapose different cultures and historical periods. They are therefore interested in multiple interpretations of reality, in cultural blending and in the study of subcultures. Post Modernism thus attempts to replace European single-mindedness and ethnocentrism with a multi-vocal approach: in short a holism based on pluralism.

Post Modernism, existentialism, ethnic roots and environmental movements, the interest in the philosophies and artistry of antiquity, of the East, of Native Americans, of Aborigines and of Africans – all represent attempts to find meaning in a materialist world spinning out of control. The mechanistic vision of classical science no longer suffices. Its analytical solutions, reductionist principles, regimented arrangements; deterministic plans, linear progress and detached scientific control can no longer provide all the answers. Why else are the leading scientific-industrial nations turning humanity

into lemmings, bent on self destruction through overpopulation, over-consumption and overkill?

In the remaining part of this book I will examine in detail how some advanced areas of sciences and modern thought have moved away from classical paradigms and are coming up with ideas akin to those discussed earlier in book in connection with the art and worldviews of traditional Africa, and indeed other pre-industrial societies. The areas covered will include biology, the social and behavioural sciences, modern philosophy, mathematics and information theory, biology, physics and astronomy.

Today in these above areas scientists, mathematicians and philosophers have now to handle a whole host of new ideas. These can be placed into the nine themes discussed in Section One of the book, but couched in different terms: the polarity of matter and antimatter, relativity principles, quantum gaps, black holes and existential emptiness, gestalts and holograms, feedback loops and curved space-time, the freedom of "uncertainty" principles and the participatory bias of ecological theories.

Furthermore, it has now been recognised as an inescapable objective fact that there is an observer effect in areas as diverse as the social sciences, environmental studies, mathematics and particle physics. In short the subjective experimenter cannot completely isolate him or herself from the research project.

I would like to re-iterate here again that this is not to say that Africans (or the ancients) anticipated modern scientific thought. Rather that some contemporary scientists and thinkers are moving beyond classical mechanistic models to ones found in the intuitions of the ancient and traditional African world.

As mentioned I have organised the similarities in these old and new worldviews into nine Thematic Chapters based in the same nine themes used in the first part of the book. The Thematic Chapters that comprise the remainder of the book are as follows:

Polarised Tensions: Relativity: Hidden Space: Holism: Circularity: A Driving Touch of Asymmetry: Mature Poise: Freewill and Determinism: The Participatory Mode



## THEMATIC CHAPTER ONE: POLARISED TENSION

Polarised tension is a crucial component of African rhythmic ritual and metaphysical order and this dynamic dualism, as noted in Section One, is found as musical up and downbeats, call-and-responses, divine twins, sacred marriages, social moieties and as the branching bifurcations of mythical genealogies.

Polarity is also an important component of modern theories on the workings of the brain and mind and in this Chapter we will first turn to the physical left/right division of the brain and to the double nature of long-lasting psychological templates known as archetypes. This will be followed by an examination of a branch of the social sciences known as structuralism that considers language and thought to be based on binary principles.

Before dealing with these topics of a cognitive nature, it should be mentioned first that even at the physico-chemical level of organic life polarities are found. Most living creatures have a bilateral structure and are divided into male and female sexes. They are also composed of organic molecules that are geometrical mirror-image isomers of each other, and contain genetic material that come in double helixes. Moreover, some nerve impulses of animals are transmitted as on or off digital impulses, while their autonomic nervous systems are regulated by oppositional parasympathetic (rest/safety) and sympathetic (flight/fight) hormones.

Finally we will look at polarisation in the hard sciences, found in the structure of atomic particles and in the phenomenon of positive and negative wave interference. Indeed, physics is full of phenomena that come in matching or corresponding halves. Electricity is positive or negative, matter and energy are inter-convertible and magnetism and electricity are two aspects of the same (electro-magnetic) radiation. Just recently astrophysicists have discovered a dark energy that counteracts gravity and whereas gravity draws the universe together, dark energy pushes it apart.

### ***Brain Lateralisation and Twin Psychosocial Archetypes***

The idea of left/right brain lateralisation goes back to the late nineteenth century when the French surgeon Paul Broca and the German Carl Wernicke discovered that it was the left cerebrum or forebrain (in a right handed person) that was associated with speech and sequential thinking. However, they wrongly concluded that the left cerebrum is dominant and the right one is silent, mute and unimportant. This one-sidedness was later corrected in the 1960's when the Nobel prize-winning American Roger Sperry began experimenting with cats on their corpus callosums, massive bundles of neural fibres that cross connects the two brain hemispheres together. Meanwhile his colleague, the neurosurgeon Joseph Bogen, used the technique of cutting into the corpus callosum of people who had certain forms of intractable unilateral epilepsy. Both found that far from the right cerebrum being mute, it was rather important for visual-spatial orientation and, unlike the left side of the brain, it tended to digest information in wholes rather than bits<sup>223</sup>.

These revelations are pertinent to music, as some researchers, including the famous soviet Russian neuro-psychologist Alexander Luria, had observed that musical sensibility seems to be mainly located in the non-dominant and so-called mute right cerebrum. He documented several cases of patients who had strokes or gunshots in the left cerebrum and therefore could not speak (i.e. were aphasic) but could sing and even compose. The famous Russian composer Vissarion Shebalin was able to write his fifth symphony with such a disability. Another evidence of this lateralisation of the musical mode comes from dichotic listening experiments where music is played through only one side of a pair of headphones. If it is played into the left ear (whose nerves cross-over to the non-dominant right cerebrum) the music is better recognised and memorised than if it is played into the right ear.

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<sup>223</sup> However, both are brought into contact via the cross-connecting corpus callosum and also limbic part of the brain-stem: the limbic area being associated with balance, motor-sensory control, autonomic flight/fight response and instinctive emotions.

In spite of what has been said above, more refined research experiments have shown that the musical ability is not totally lateralised. Different aspects of musicality are rather lateralised between the two brain modes, depicted below:

<b>Dominant Brain Mode</b>	<b>Non-Dominant Brain Mode</b>
Reading scored music linearly (melody)	Reading music vertically (chords)
Analysing music	Appreciating/hearing music
Deciphering frequency-modulated syllables	Deciphering complex tones
Sudden pitch changes (consonants, pizzicato)	Vowels and steady-state sounds
Naming pitches/rhythms	Recognising pitches/rhythms
Syntax and grammar	Tonally and rhythmically organised words

The famous Swiss pioneer psychologist Carl Jung also came up with a concept of mental lateralisation, but one not linked to the physical division of the forebrain. Jung was rather more interested in the formation of long-term mental templates, which he called archetypes or psychic dominants and which were psychological equivalents to instincts. From his research and clinical work he concluded that these archetypes invariably appeared in twin mirror-image form.

For instance just as each sex carries some physical remnants of the opposite sex<sup>224</sup> every human being, irrespective of gender, has a male Animus archetype and the female Anima one. Jung believed these were symbolised in interlocked masculine and feminine stereotypes such as mother nature and father time, Yin and Yang, fertility goddesses and rain gods. A second archetypal

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<sup>224</sup> Like the nipples of a man or the clitoris of a woman.

dichotomy is between the conscious mask or Persona presented to the world by an individual, and the unconscious Shadow: polar opposites exemplified in literature as Dr. Jekyll and Mr. Hyde, or as Dorian Grey and his ugly portrait. A third Jungian archetypal dualism is between the outgoing sensuous "extrovert" aspect of character and the inwards idealistic "introvert" one: two sides of the same archetypal coin epitomised mythically by Dionysus and Apollo.

More of these archetypal polarities will be discussed later in the book<sup>225</sup>, but Jung suggested that all these various polarities are depicted in myth and literature; by double-faced janus-like figures, by divine twins joined together in marriage, or as Lewis Carol's Tweedledee and Tweedledum locked together in eternal conflict.

### *Structuralism and the Polarity of Language and Mind*

Structuralism is a mid twentieth century branch of the social sciences that was not happy with the ultra-relativism of comparative sociology and linguistics. As will be discussed in the next theme, cultural relativism posits an infinite number of possible types of social behaviour and grammars. Structuralists, however, wanted to go deeper and create one universal code for human behaviour; and so turned to the seminal ideas of the eighteenth century German philosopher Kant. Kant<sup>226</sup> would not accept the then current British Empiricist philosophical notion that the mind was simply like blotting paper, just passively absorbing the sensory bits and pieces that happened to be around. Sensations, for Kant, were rather actively sifted into stable mental patterns by innate and a priori "categorical imperatives": the most fundamental being those of space, time and causality.

Structuralists developed Kant's exploration of these innate mind categories by claiming that behind the intricacies of language and thought there is a fundamental logico-

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<sup>225</sup> Another psychological theory that involves polarity is the mental tension/release mechanism or "Parsimony Principle" of the early Siegmund Freud. This will be examined under the Thematic Chapter Two on relativity.

<sup>226</sup> See the 1964 reprint of Kant's book on the subject.

mathematical foundation. For example, the French anthropologist Claude Lévi-Strauss (1968) analysed the myths of diverse societies and concluded that they could all be treated as idealised behavioural networks, which ultimately branch down into binary alternatives of conduct. In other words, the type of behaviour practised by a particular society was related to its deep-seated oppositional notions of good and bad, male and female, raw and cooked, old and new, sacred and secular, and so on. These mythical webs of ritual dos and don'ts of a specific society became, for Lévi-Strauss, an actual grid-reference and scenario for every type of binomial permutation of individual behaviour within that society.

The structuralist Noam Chomsky (1975) worked in linguistics rather than anthropology. He compared dozens of different grammars, which, like Lévi-Strauss' myths, were based on polarity. For Chomsky suggested that under the surface grammar of any language there is a deeper "transformational grammar" that is founded on a system of binary alternatives that is capable of generating an infinite number of semantic variations for the individual to choose from.

The Swiss child development psychologist Jean Piaget<sup>227</sup> was another important structuralist interested in binary codes. Firstly he pointed out that the binary principle was grounded in the very way nerve and muscle impulses are electro-chemically transmitted. They are either, as previously mentioned, conveyed as digital impulses that are either on/off, or as analogue impulses that only are triggered above a specific threshold. Secondly and at the cognitive level, he considered that the binary principle was rooted in the way infants learn at the pre-linguistic stage when perceptions of identity, persistence, reversibility and hierarchy initially emerge. Piaget believed that the binary mode ultimately stems from a polarised sensory motor system and produces such oppositional categories as me/other, before/after, left/right, above/below and so on.<sup>228</sup> In

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<sup>227</sup> See Piaget (1955, 1962).

<sup>228</sup> The philosopher Susanne Langer (1963) has attempted to extend structuralism to some of the cognitive processes underlying music: such as tension/resolution, difference/similarity, succession/stasis and high-tones/low-tones.

many ways this is equivalent to what Evan Zuesse calls the “ascending” symbolic system that, as discussed in Chapter Two, is used by the Ila people of Zambia to build up a picture of reality from the bottom up: i.e. from subconscious intuitions grounded in sensory bodily polarities.

### *Atomic Opposites and Wave Interference*

Polarities are found in subatomic particles as positive or negative charge, or a left or right spin. Paul Dirac also discovered the principle of parity, that for every subatomic piece of matter there is also a corresponding a mirror-image piece of anti-matter. Furthermore, subatomic particles (whether of matter or anti-matter) seem to be able to simultaneously exist as a wave and as a material particle.<sup>229</sup>

This idea of atomic dualism was an idea first put forward in the 1920’s by the French physicist Louis de Broglie. He believed that electrons were not particles, as suggested by the British scientist Lord Rutherford, but rather “matter waves” created out of tenuous clouds of vibrating electron gas which sets up standing waves within the confines of each atomic shell.

Although de Broglie’s concept of electronic “matter waves” was subsequently superseded by the even more nebulous notion of probability-waves, his basic idea of atomic resonance or tuning has stood the test of time. Before proceeding, however, it is first necessary to elaborate on standing waves and the related phenomenon of interference.

Indeed, this topic has already been touched upon previously in Chapter One as the positive and negative interference of two or more overlapping sound vibrations. This polarity, as was noted, produces effects as far removed as the “resultant” of two musical cross-rhythms, the beatings of two slightly mistuned piano strings and the pulsations of German twin engine warplanes of the Second World War.

Another familiar example of interference occurs when two sets of waves coming in from the sea pass through two openings

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<sup>229</sup> As will be discussed in Thematic Chapter Four on holism the ability of matter to co-exist in two contradictory states at the same time (wave and particle or “wavicle” was later called “complementarity” by the Danish scientist Niels Bohr.

in a harbour wall. If these openings are large in relation to the length of the wave (i.e. the distance from one crest to another) then no interference or super-positioning of the two sets of ripples, and they simply pass through the opening unchanged. However, if the openings are smaller than the wavelength then positive and negative interference takes place, resulting in a completely new type of wave forming within the harbour with a quite different wavelength and greater height (i.e. amplitude) than those of the original ocean waves. In other words super-waves with super-troughs and super-crests. These two contrasting states are depicted below.

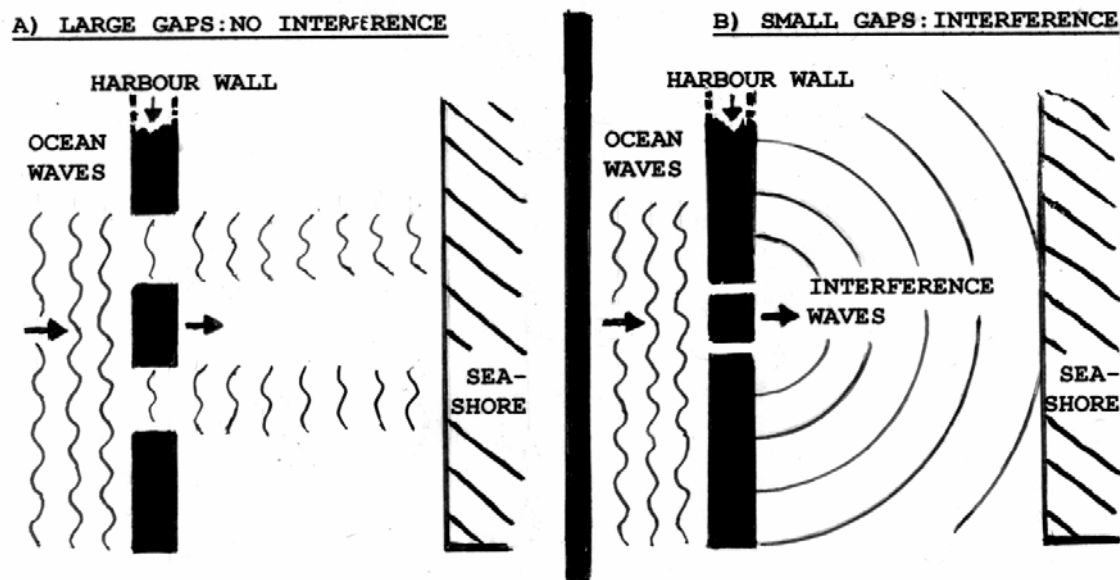


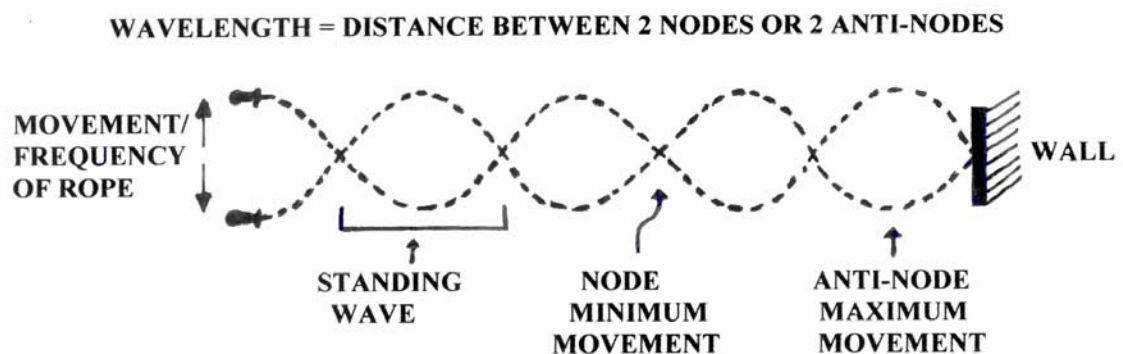
Figure 42: The interference of ocean waves through two gaps

Airwaves also exhibit interference<sup>230</sup> and a common example of this occurs when the terminals of one of a pair of stereo hi-fi speakers is incorrectly wired to an amplifier. Instead of hearing the full stereo effect the listener rather hears an incomplete and hollow sound. This is because the two sets of airwaves coming from the speakers are in reverse polarity and so almost cancel each other out by a process of negative interference.

<sup>230</sup> However, unlike sea waves that are composed of crests and troughs of water, waves in air and other gases waves are characterised by areas of pressure compression and rarefaction.

Both these above examples of liquid and gaseous interference take place in an open situation, with the waves ultimately dissipating onto the shore or into the surrounding air. However, when interference occurs in closed systems where the waves are trapped and so are reflected backwards and forwards, then standing waves will result.

For instance, when a length of skipping rope is repeatedly flipped up and down and the other end of the rope is free, (i.e. an open system) then one simply gets waves running down its length. If, however, one end is attached to some firm object then ripples of rope waves will be reflected back into the oncoming ones. The two sets of waves will then cross and interfere with each other forming a number of seemingly unmoving standing waves. As can be seen in the following Figure these consist of areas of anti-nodes of maximum vibrational energy interspersed with nodes of relative stillness.



*Figure 43: Standing wave in a skipping rope*

Exactly the same principle applies to a plucked string of an instrument, although here it is the elasticity of the string, which provides the continuing vibrations, rather than the movement of the arms. This continuing vibration of the string creates a fundamental note over-laid with standing waves called harmonic overtones, which give the note its particular quality or timbre. Furthermore, the timbre can be altered by highlighting specific overtones, depending on how hard or where the string is plucked, or on the size and shape of the resonance sound box to which the string is attached.



The simplest standing wave of a plucked instrument is of course the single one of the fundamental note, called the first partial or harmonic. A higher sounding note created by a second superimposed standing wave is called the second partial/harmonic or first overtone, whilst three standing waves produce the third partial/harmonic or second overtone. And so on.

These are depicted below on an instrument used in acoustic experiments called a monochord, the length and tension of the string determining the frequency of the fundamental note. In the following Figure the fundamental frequency is the note low C, which vibrates 65.5 times per second (i.e. Hertz). We can see clearly that the frequency of each succeeding partial/harmonic is a simple multiple of the fundamental, for standing waves always exist in whole numbers. It is impossible to have a fraction of a standing wave, however many there are, as the last ones at either end have to be still nodes, as this is where the string is fixed to a firm attachment.<sup>231</sup>

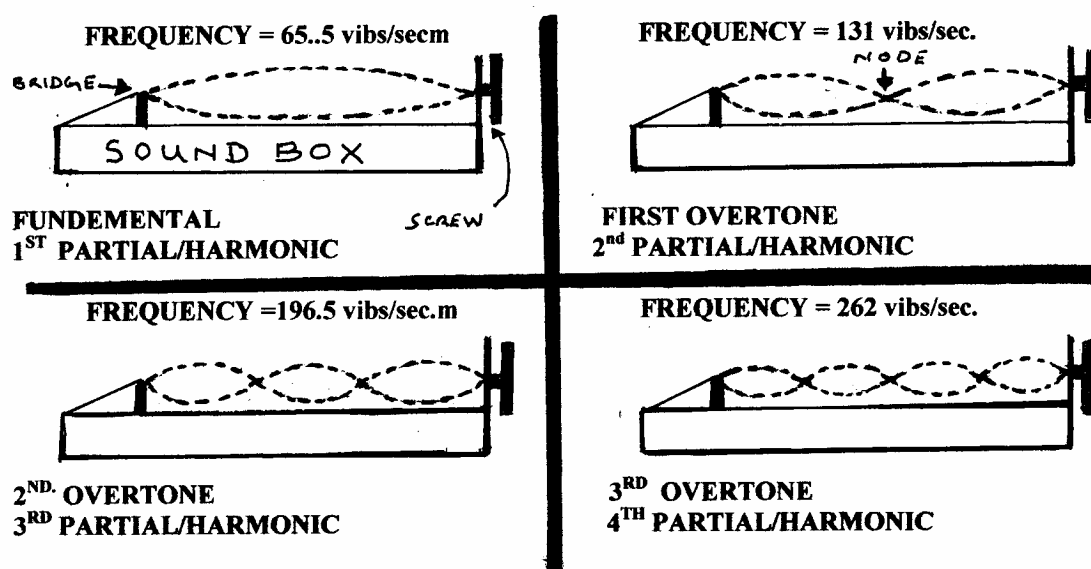


Figure 44: Various partials of standing waves in a plucked string

<sup>231</sup> It is because the nodes are by definition stationary that if one hooks a bent twist of paper over any of the internal nodes it will not be thrown off by the vibrations and will hardly dampen the note.

*The first illustration is of an open fundamental C (65.5 hertz) made up of just one single waveform. The second illustration contains two waves of half the length of the fundamental and so is an octave above. It therefore has a frequency (131 hertz) and double that of the open string. The third contains three waves which are a fifth above the preceding octave, namely G (196.5 hertz). The final illustration is of four waves that produce a note two octaves above the fundamental (262 hertz). Although not shown, five waves would create E (327.5 hertz), six waves a higher octave of G (393 hertz), seven waves a note between A and B flat (448 hertz) and so on.*

As well as in strings, standing waves and overtones can also be produced in other closed vibrating systems; for example in the sealed columns of air in pipe organs and wind instruments, or the fixed surfaces of cymbals and sound boxes. However, whether strings, surfaces or air columns, it is the particular harmonic mixture and relative strengths of the various partials or overtones which determines the distinctive texture and timbre of an instrument.<sup>232</sup>

Besides the monochord that has been used since the times of Pythagoras, scientists employ other devices to study interference. One is the Ripple Tank that contains agitated water and produces miniature effects such as those discussed earlier involving interfering sea waves. Another is the Chladni Plate invented two hundred years ago by the German scientist Ernst Chladni. He vibrated differently shaped pieces of flat metal by drawing a violin bow across their edges. To make the standing waves visible he dusted his plates with fine powder, thereby producing concentric rings, spirals, grids, hexagons and other dust patterns that settled in the relatively unmoving nodes of each particular standing wave.

Precisely the same thing happens on the vibrating surface of a beaten drum, although the standing airwaves, which are formed and give the drum its note and timbre cannot be seen. Moreover, whereas only one note can be obtained from a Chladni Plate, a beaten drum can provide many notes. Striking the drum's centre emphasises the deeper overtones, striking its

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<sup>232</sup> This fact is utilised in music synthesisers which combine the simple waveforms of its electronic oscillators (i.e. vibrators) into the complex interference patterns and harmonic shapes of the particular instrument whose sound is being synthesised: violin, piano, guitar, trumpet and so on.

rim produces a higher one, whilst muting (pressing down on the stick/hand) gives an even higher one.

Having discussed interference effects in general we can now return to de Broglie's matter waves, which as already noted, are subatomic standing waves created by electron gas spinning and vibrating about within the closed boundaries of an atomic orbit or shell. De Broglie believed that discrete electrons, or more precisely "matter-waves", were nothing more than the relatively still nodes within these subatomic vibrations. Furthermore, just as it is the standing waves of air in an instrument's closed sound-box that determines its particular acoustic pitch (frequency) and timbre (quality), so too it is the standing waves of electron gas in each particular shell which determines the number, frequency and shape of the matter-waves.<sup>233</sup>

All this came as quite a shock to the scientists of the times, who conceived electrons as solid and revolving planet-like around an equally rock-hard atomic nucleus. Then in the late 1920's de Broglie's matter wave theory became even more rarefied when Erwin Schrödinger and Max Born modified it. These two physicists threw out the material aspect of de Broglie's model altogether (i.e. the electron gas) keeping his standing waves notion only in a mathematical sense. For the German Max Born matter waves became probability-waves or patterns within which electrons could potentially occur. Schrödinger subsequently developed a mathematical system known as Wave Function Equations to handle all the possible harmonic permutations in which electrons (and other forms of subatomic matter) could occur.

Let me summarise. The indivisible atomic elements of classical physics have dissolved into scores of subatomic particles. These in turn are not immutable components, but rather mirror-image particles or probabilistic patterns of criss-crossing vibrational energy. The fundamental structure of matter is therefore polarised. For particles this occurs as opposing charges and spin, matter and anti-matter. For waves it is the harmonic result of

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<sup>233</sup> The different atomic shells themselves in turn represent the different possible harmonic overtones of the vibrating electron gas which is spinning faster in the shells further from the central nucleus.

positive/negative atomic interference. But whether waves, particles or “matter waves” this dualism is all part of what the physicist Fritjof Capra calls the “particle dance” in his book *The Tao of Physics*.<sup>234</sup>

## **Conclusion**

Polarism in African symbolism appears as the sonic ons/offs and other alternations of musical rhythm. It also occurs as the divine twins, marriages and other sexual metaphors of myth and legend, and as the segmental opposition and ritual moieties of clan organisation.

Polarism has also found its way into modern scientific symbolic systems (i.e. theories) that are moving away from the single-mindedness atomism of the eighteenth and nineteenth centuries.

At the microscopic level the physical sciences have Dirac's matter/anti-matter and Einstein's inter-convertibility of energy and matter.

Psychologists have uncovered duplex divisions in consciousness, such as Jung's mirror-image archetypes and, as will be discussed later, Freud's emotional Id and repressive Super Ego.

Structuralists believe that language, cognitive behaviour and myth are rooted in deep binary codes, which in turn are themselves based on a mathematical system which employ just two digits: on/off or one/zero.

Neurological polarity is evident in digital on/off neural impulses, left/right brain lateralisation and in the electro-chemical tension-release mechanisms of individual neurones. Another biological example is the endocrine system whose nerves and hormones are triggered by states of either relaxation or danger.<sup>235</sup> Endocrine dualism in turn affects brainwaves: namely the alpha waves of rest and the beta ones of alertness.

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<sup>234</sup> This was written in 1975. A book that uses a similar dance metaphor for subatomic activity is Gary Zukav's 1980 book *The Dancing Wu Li Masters*.

<sup>235</sup> The parasympathetic nerves and hormones are in the ascendancy during periods of relaxation and rest, whereas the sympathetic ones come into play as the “fight or flight” mode.

Indeed some musicologists suggest this combined endocrine/brainwave polarity may relate to two distinct types of musical affect. On the one hand there is relaxing steady-state music and gentle rocking of lullabies and meditative-trance inducing instruments, such as the Zimbabwean hand-piano<sup>236</sup> and the maraca shakers of West African Afa diviners. On the other hand, louder and more violent drum music and vigorous dancing induces the beta wave of agitated possessional trance.

Polarised structures in both the African worldview and some modern scientific theories helps explain one level of energy for the system in question: whether the hot cross-rhythms and contesting divine twins of African music and myth, the dynamic interplay of the dual-archetypes of psychology, the oscillating waves and particles of the atomic realm or the binary permutations of Structuralism.

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<sup>236</sup> For details on the use of the Zimbabwean instrument used by diviners contacting ancestral spirits, see Paul Berliner's 1978 book *The Soul of the Mbira*.

## THEMATIC CHAPTER TWO: RELATIVISM

It is to the Albert Einstein's two theories of Special and General Relativity<sup>237</sup> that we first turn, which verified that there is no single universal space-time fabric, but rather a multidimensional space-time continuum that can be geometrically bent and warped in relation to the position, relative speed and mass of an observer. As in African polyrhythmic music there is no sole starting point, as with African calendrical systems there is no single time scale, and as with African carvings perspective is multi-angled and not determined by the eye of a fixed beholder.

There is also a traditional African belief that a person is a constellated soul. This is remarkably similar to some modern psychological beliefs which consider that personality, far from being single-minded, is rather composed of various levels and complexes<sup>238</sup> that will be discussed more fully below.

We will then continue this examination of contemporary relativity with cybernetics, which has moved from unilateral logic machines to the modular and parallel structures of both artificial and human intelligence. To employ a musical expression, they have changed from the monodic to the poly-vocal.

Finally we will examine the fact that in spite of the suggestions by scientists, such as Helmholtz, that the Western scale is the only rational one, to which ancient ones have been evolving towards, there are in fact a multiplicity of possible and equally valid scales that are dependent on the choice made by the culture of a specific society or historical epoch. In short cultural tonal relativism.

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<sup>237</sup> See L. William.

<sup>238</sup> This common psychological expression, first coined by Carl Jung, means an organised constellation or gestalt of mental themes that exists semi-autonomously within the total personality: i.e. sub-personalities with a life of their own.

### *Albert Einstein*

Einstein's Special Theory of 1905 overturned the long established view that there is a single and absolute space and time grid for the whole universe, for he realised that these co-ordinates at the astronomical level were dependent on the unique perspective and position of any particular observer.

His contention was based resulted on Michelson and Morley's earlier discovery that the velocity of light (and other types of electro-magnetic radiation) was not instantaneous but had a definite speed<sup>239</sup>. If radiant energy and information takes time to travel then how can the universe have a single common time?

At the time when Einstein began to think about this problem, there was already one mathematical theory on the relativity of frames-of-reference called Restricted Relativity that went back to the time of Newton. According to this theory if, for instance, a person drops a stone from a moving train it will seem to fall straight down, whereas for an observer on a station-platform the stone will move to the ground in a curved parabola. This scenario, however, takes two tenets for granted. Firstly, that the size of objects moving relative to one another remains constant, and secondly that their time-scales remain synchronised. Indeed for the low-speed objects we find on our planet these two tenets do hold, but they do not when things approach near light speeds.

It was the mathematicians Lorentz and Fitzgerald who disproved the first tenet in the 1880's when they demonstrated that the volume of an object moving at near light speeds seems to contract from the point of view of a stationary observer. The faster things move the more compressed they become. Through a series of calculations called Transformational Equations these two scientists were able to predict the exact amount of shortening at various speeds.

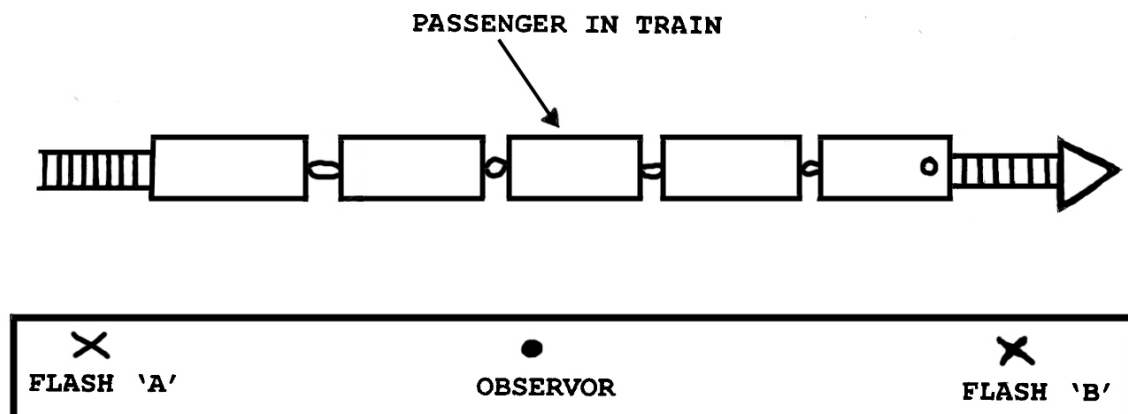
Einstein's Special Theory of Relativity disproved the second tenet of Restricted Relativity of there being a single common time for all things in the universe. The impossibility of a single universal time for Einstein was not simply the result of the

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<sup>239</sup> 186,000 miles per second.

previously mentioned fact that time goes out of synchronisation for objects at differing astronomical distances from each other. It was rather that time goes out of synch for objects travelling at differing speeds relative to one another. This ability of time to be compressed and stretched brings us back to the African musical modality, with its tempo perturbations, auditory illusions, rubato and rhythmic swing.

Einstein's point can be explored using the following analogy. Imagine an incredibly fast train going at the speed of light. It then passes a railway station on which an observer is standing exactly half way between two flashbulbs at either end of the platform and which he controls. This is illustrated as follows.



*Figure 45: Super fast trains and relativity*

Our observer on the platform flashes the mechanism at exactly the moment when a passenger he knows, and who has stuck his head out of a carriage window, passes him. Who will see what? According to the Restricted Relativity theory, the standing observer will see the two flashes simultaneously, whilst the moving passenger will see the flash ahead slightly earlier than the one he is leaving, as his speed has to be added to the on-coming light and subtracted from the one down-track. However, this would mean that the oncoming light would have to be speeded up and therefore travel faster than the light constant of 186,000 miles per second. This was quite impossible according to the laws of physics at the time and so something in the equation had to give. What Einstein did was to apply the Transformational Equations of Lorentz and Fitzgerald to time



instead of space. Consequently, as far as Einstein was concerned it was not space or volume that had to contract, but rather time that had to dilate or slow down.

In a nutshell, Einstein showed us that at ultra-high speeds space shrinks and time expands. However, in our everyday zone of middle dimensions that is halfway between the macrocosmos of astronomy and the microcosmos of the proton, these effects are too insignificant to notice.

Below are two Figures, which graphically show the difference between Einstein's Special Relativity and classical Newtonian Restricted Relativity with its single universal space and time grid. The time units are in seconds and each space unit is equivalent to 186,000 miles (i.e. the distance light travels in a second). On the classical left-hand Figure light moves horizontally on the graph as it is instantaneous. On the right Einsteinian side, however, light moves at 45 degrees to the horizontal (i.e. at 186,000 miles per second). This produces two different sets of light-lines, which slope in different directions and can intersect each other at any particular point (i.e. C in the Figure). This results in a light-triangle, or light-cone if the graph is rotated in a third dimension.

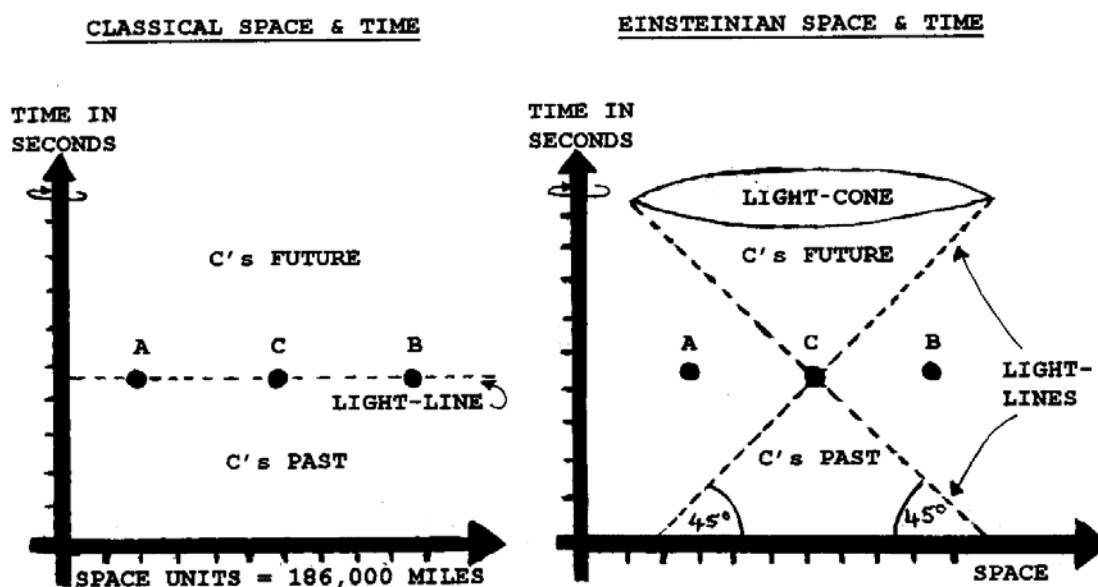


Figure 46: Classical Newtonian and Einsteinian space-time

In both the above Figures the three observers A, B and C are placed on the same time co-ordinates. In the Newtonian Classical Space-Time Figure an event happens to the three observers at exactly the same time however far apart they are, as light and other forms of electro-magnetic radiation have an infinite speed and so can instantly link everything up.

In the second Space-Time Figure, Einstein's notion of space and time is quite different as radiation moves in it at the finite speed of light (i.e. 45 degrees in the Figure). This limits the universe of observer C (say us on earth) who stands at the intersection of two light-cones. Observers A and B lie outside C's light cones and therefore cannot be seen or even be causally related to C, or even C's past and future in any way whatsoever. This is because any connection between them would have to be at an angle of less than 45 degrees, and so would have to move faster than light. Scientists call such impossible lines of less than 45 degrees to the horizontal "space-like". However, connections between the Observer C and any points within the two light-cones are possible, as whether they are below or above C (i.e. C's past or future), the angle they make is greater than 45 degrees and therefore do not necessitate faster than light speeds. Scientists call these possible angles "time-like".

So Einstein's Special Theory of Relativity not only suggests that space and time can be expanded, shrunk and warped, but also that every world is surrounded by a local universe beyond which there is a contemporary "space-like" universe that can never be known in any way.

In 1916 Einstein expanded his Special Theory into his General Theory of Relativity. This reveals that it is not only the relative speed but also the gravity (which is dependent on mass) of objects that can distort space and time. He knew from the earlier theory that accelerated objects warp space and time, and he also knew that for small volumes of space, where matter is more or less evenly distributed (like on our earth for instance), gravity and acceleration can be treated as equivalent. A familiar instance of this equivalence occurs when a person is spun or accelerated around a Wall-of-Death at a fun fair, for the

resulting artificial gravity holding that person to the wall is mathematically indistinguishable from normal gravity.

At the cosmic level, on the other hand, matter is not evenly dispersed but is clumped into stars and galaxies, with a lot of deep space in between. Therefore, equivalence breaks down. Einstein got around this problem by mathematically dividing the total known cosmic mass into pieces, each small enough for the equivalence of gravity and acceleration to apply. He was then able to use the Lorentz-Fitzgerald Transformation Equations for relative speeds and accelerations to each of these pieces and then add them up at the end to obtain the total gravity of the universe, measured in the same units as acceleration.

Through this procedure Einstein discovered that not only did increasing gravity, like increasing acceleration, slow down time and shrink space, but that gravity also bent space in a dimension extra to the three normal ones. Einstein called this the fourth dimension of space-time, and then went on to prove<sup>240</sup> that the greater the mass and gravity of an object the more it warps and curves space-time.

Here on earth we do not notice this effect, as the mass of our planet is so small that its space-bending property is very slight. In fact the fourth dimensional circle it creates is of two light years diameter that is far too large for us to be aware of. Therefore, like the ancient Greek mathematician Euclid, we take it for granted that light travels in straight lines and that parallel lines never meet. However, for massive bodies like our sun this bending of space-time is very noticeable. Indeed that is why we orbit it; for the planets circle the sun not so much due to its gravitational pull, but rather because they fall into the curved space around the sun. It is the acceleration of this endless fall that, in turn, provides the balancing energy that keeps earth in a stable orbit.

In his two theories of relativity Einstein demonstrated that the speed and mass of a seemingly isolated object effects its surrounding space and time scale, and that the old

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<sup>240</sup> By using Tensor Mathematics invented by Reissman to deal with the geometry of curved surfaces rather than the flat ones of Euclidean geometry.

Newtonian/Cartesian idea of a single universal scaffold in which all things fit is an over-simplification. The cosmos is rather composed of different local times and geometry's which are aspects of a four dimensional Space-Time Continuum that can be stretched, squeezed and twisted by matter. The relativistic world of Einstein can no more be boxed into a fixed space-time grid than African music can be boxed into the tick-tock of a metronome.

### ***Psychological Complexes and Multiple Archetypes***

A major scientific break-through in the twentieth centuries was the emergence of psychology and the realisation that human consciousness is not only just a single-minded rational ego,<sup>241</sup> but rather consists of multiple conscious and subconscious levels, complexes and archetypes.

Psychology had a major root in the previously mentioned eighteenth century philosophy of Empiricism<sup>242</sup> whose proponents (like John Locke) stood against the current scientific/Cartesian ethos of the time and treated the mind as a ghost in the machine. Empiricists rather put mind before matter.<sup>243</sup>

Despite its extreme subjectivism this school did produce two seminal ideas that were each and separately taken up later by psychologists. Firstly, the Empiricists held the current scientific Enlightenment view that everything could be broken down to individual atoms, in this case sensory mental atoms.<sup>244</sup> Secondly,

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<sup>241</sup> Descartes, for instance, believed that there was a tiny self-conscious being or "homunculus" that inhabited the mind and which rationally and mathematically sifted and sorted sense-impressions and memories.

<sup>242</sup> This was the British philosophical school that Kant criticised for believing that the mind absorbed sensory "atoms" passively.

<sup>243</sup> The Empiricists Bishop Berkeley and David Hume went even further. They claimed that nobody could prove the existence of anything outside the mind at a particular instant of time, as ultimately awareness was essentially a succession of fleeting and fragmentary sensual perceptions. These only create the illusion of memory, history, the taken-for-granted world and even of the solidity of science itself.

<sup>244</sup> As mentioned earlier the Empiricist idea that these sensory "atoms" were passively absorbed into conscious was questioned by Kant, who believed sensations were actively filtered by pre-existing mental structures.

they were intrigued by how these became combined and associated into coherent thought patterns.

The very earliest experimental psychology studies, as opposed to the philosophical speculations of the Empiricists, came from Germany during the late nineteenth century. This was the Introspectionist School of psychology that rejected the atomism of the earlier Empiricists but developed their associationist ideas. The Introspectionists were particularly interested in how the brain selected and grouped perceptions and memories. And this anti-atomistic tendency was particularly developed in Germany in the early twentieth century by the Gestalt Psychologists Max Wertheimer, Kurt Koffka and Wolfgang Kohler<sup>245</sup> who treated mental constructs as total patterns or configurations (i.e. *gestalts*) that were greater than the sum of their parts. This explains why, for instance, we can instantly distinguish a face, a complicated shape or piece of music, without necessarily having or even being able to break it down into its component features. Furthermore, and to continue in a musical vein, a familiar melody is easily recognisable even when the key is changed and therefore the individual notes quite different, for it is the total pattern (i.e. melodic contour or shape) that counts in gestalt theories.

The Behaviourists focused on the atomistic rather than associationist concepts of the Empiricists and totally opposed this German holistic school of gestalt psychology. Leading Behaviourists, like the Americans J.B. Watson<sup>246</sup>, B.F. Skinner and the Russian Ivan Pavlov, conducted laboratory experiments on animals in an effort to isolate behavioural units which they termed "conditioned reflexes" and "stimulus-responses". It was chains and bundles of these behavioural units or "atoms" that they considered being the source of all animal and human conduct. The contrast between gestalt and behaviourists theories will be returned to later in this chapter.

Besides the Introspectionists/Gestaltists, a second major stream of early twentieth psychology which incorporated

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<sup>245</sup> See Koffka (1953) and Kohler (1976).

<sup>246</sup> See Watson (1965).

Empiricist associationism was the Depth Psychology of Siegmund Freud and his disciples. Its clinical branch became known as psychoanalysis.

Like the gestalt psychologists the “Depth” ones were interested in patterned rather than atomised mental behaviour; but they also tried to base behaviour on a single fundamental drive: sexual tension or Libido in the case of Freud, the power urge for Alfred Adler, the quest for immortality and self-preservation in the case of Otto Rank<sup>247</sup> and the collective instinct for Carl Jung. Nevertheless, in spite of just one activating primal drive, these Depth Psychologists recognised that the human mind or psyche<sup>248</sup> itself was a composite or constellation of semi-independent levels of consciousness, complexes and archetypes. This is quite unlike the Enlightenment notion of a single centred rational ego and is rather similar to the African belief in multiple souls discussed in Chapter Two.

Freud called the primal drive/energy that could find so many levels and take on so many shapes “polymorphous”, and likened it to a fluid. Thus for him the polymorphous Libido literally irrigated or watered consciousness, which he divided into three levels. In Freud’s schema raw Libido arose from the lowest unconscious level of the mind, which is closest to our instinctive animal state and which he named the “Id”. It was then channelled upwards into the everyday consciousness of the Ego through a series of filters or dams Freud called “censor” or “defence mechanisms”. These in turn were under the control of the highest level of his tripartite model of the mind. This he called the Super Ego, which represented the internalised conscience of society that could repress both the Ego and Id.

In Freud’s somewhat mechanical, or rather hydraulic view, normal behavioural complexes are the result of the libidinous pressure that is welling up from the Id being successfully reduced or sublimated in the higher Ego and Super Ego levels through channelling and re-channelling. Indeed he gave two

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<sup>247</sup> See Rank (1968).

<sup>248</sup> This is the old Greek name for the mind that psychologists now use. Not to be confused with psychic as super-natural or paranormal.

names to this overriding tendency to discharge libidinous energy. In the negative sense of pressure or tension-release he called it the Parsimony Principle, but in the more positive sense of searching for tranquillity he called it the Nirvana Principle. Freud believed that pathological complexes develop when these principles are thwarted or repressed, which occurs when the libidinous pressure meets just too many filters and censor mechanisms and so becomes dammed-up. As a result the thwarted Id turns perverse.

The main thrust of Freud's psychoanalytic method was therefore to make the patient aware of the traumatised complex, which he did through the dream analysis of his neurotic and more mentally disturbed psychotic patients. Freud considered dreams and fantasies to be the unfulfilled libidinous wishes of the Id. Therefore, if these could be correctly interpreted and brought to full consciousness, they could suggest ways of re-channelling and re-sublimating the blocked and therefore self-destructive energy of the complex in question.<sup>249</sup>

Jung, like Freud, Adler, Rank and Reich, believed there was a fundamental unconscious mental energy that became manifested through complexes, or what Jung called archetypes. However, unlike the other Depth Psychologists who considered the primal psychological drive in terms of individual sexual gratification, immortality, self-preservation and power lust, Jung believed it originated at a much deeper and non-personal level, which called the Collective Unconscious. Archetypes were therefore not just individual phenomena, but also reflected the collective residue of humanity's experience. Moreover, these psychological equivalents to instincts were so pervasive and universal they keep appearing in different times and places as similar symbolic and mythological motifs.

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<sup>249</sup> A pupil of Freud called Wilhelm Reich went even beyond dream therapy, for he considered that pathological complexes not only distorted thinking but also the body musculature as well. He therefore developed psychiatric techniques for deep massage and relaxation to dismantle this stiff neurotic "body armour" and thus help un-dam the primal libidinous energy: which he called "orgone" energy.

According to Jung, an individual's total mind or "psyche" is a constellation of such primordial archetypes. However, these innate images usually appear in complimentary pairs such as the Animus/Anima, Persona/Shadow and Introvert/Extrovert: twinned aspects of archetypes that were touched on earlier in connection with polarity.

### ***Parallel Processes and Cybernetic Counterpoint***

The previous chapter's discussion on mental polarity leads us on to the question as to whether binary nerve impulses alone are capable of producing human thought. Recent evidence from computer simulations of the human brain and from neurology suggest otherwise. Computers use electronic binary digital codes and with early computers improvements in design were largely concerned with enlarging their digital memory and central processing ability, by increasing the size and power of computers and miniaturising their components. However, for newer generations of computers it is more a question of connecting numerous modules into parallel distribution networks. These, as the name suggests, are not old-fashioned single memory/processors but are rather hundreds of them, linked up and working together. In computer language this is called "connectionism".

The same connectionism also seems to apply to biological nerves and here I will just one example. Recent research into the visual mechanism of animals has shown that sight is not based on one memory/processor but on four main components, each with its own separate memory and processing arrangements. These are the ability to discern colour, motion, stereovision (i.e. distance) and form. This biological connectionism, however, does not end here, as it is now thought that many of the optic nerve fibres themselves contain mini-memory/processors. For example, frogs seem to have retinal receptors with built in bug detectors, which fire whenever the image of any small, dark, object moves across them. In this decentralised modular visual system the brain does not always have to process the raw information



coming in, as the retina itself has some ability to identify and then notify the brain.

This parallel processing idea can be applied to consciousness as well, which counter-acts the old notion of there being a single seat of consciousness; like Descartes' invisible brain homunculus. For instance, in his book *Consciousness Explained*, Daniel Dennett (1991) proposes a multiple drafts model that sees self-awareness arising from parallel streams of data being continually edited and redefined. For Dennett therefore, consciousness is not the product of one mythical central subject but rather it is the sum total of all the drafts or data-streams.

Quite a different contribution to the study of parallel processes occurring within mental operations comes from the link-up of computer experts and composers. Professor Marvin Minsky of the Massachusetts Institute of Technology who had been involved with Pierre Boulez's computer-music centre in Paris forged one such link. From the knowledge he gained there, Minsky proceeded to build more sophisticated computers and programmes. As he says (1967) "I've really learned a lot about how to do three things with my mind through musical counterpoint, without clobbering each other."

According to Minsky, what makes the human mind superior to artificial intelligence is its ability to span numerous cross-thoughts at the same time: not surprising when one realises that every brain nerve-cell or neurone has ten thousand different connections. He metaphorically calls this higher hierarchy of multiple and ever shifting neural networks "mind spiders", an organic equivalent of modular parallel distribution computers. The British computer expert Doctor Kevin Jones believes that these parallel mind-spiders operate in a kind of counterpoint, directly comparable to a musical composition, where many voices proceed independently and yet are intrinsically dependent on each other.

The neural webs these mind spiders weave look suspiciously like the semi-autonomous psychological complexes or archetypes that, as discussed earlier, make up the totality of mind.

### *Helmholtz's Sound Spectrum*

The nineteenth century German physicist Hermann Helmholtz thought he had discovered an absolute basis for musical scales in the physical overtone series of vibrating bodies. Furthermore he assumed that Western scales are more fully rationalised and therefore superior to so-called primitive ones: a Eurocentric notion that we will see is flawed.

The premise for his hypothesis was that this natural series of higher vibrations of a musical note are composed of a series of scientifically verifiable distinct and separate tones. However, as will be discussed below his theory ultimately leads to a musical spectrum or fuzzy continuum from which an almost infinite number of scales can be fashioned.

This puzzling relationship between the discrete and the continuous is somewhat similar to the earlier discussion on African rhythms concerning the ever increasing number of graphical "density referents" per second needed to fully notate complex drum patterns of master-drummers. As previously noted, their time bending capabilities defy quantification as they operate in an elastic field rather than clockwork microtime.

Incidentally, the current debate on whether it is the digital or analogue mode that is superior for quality music recording touches on this subject of the discrete or continuous. The digital buffs claim that the quantification or digital sampling rate of music is so high that it surpasses analogue recordings done on old-fashioned gramophones and tape-recorders. On the other hand the fans of analogue hi-fi records and cassettes prefer sounds that are stored in smooth and seamless waveform<sup>250</sup>. Technically the analogue supporters are correct as it does not matter how fast the sampling rate of a performance ultimately gets, there will always be gaps in between each sample; whereas in continuous-wave recording of the same performance there can be no such gaps. This idea of discrete sequential samples of phenomena always being less than the equivalent analogue

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<sup>250</sup> These are actually modulated wave-forms. In the case of a record plate the wave is in the form of physical scratch contained within its grooves, for tape-recorder the wave is in the form of a continuous magnetic imprint.

continuums of them will be dealt with again in connection with mathematical incompleteness that will be discussed in the next theme on Hidden Space. But let us return to Helmholtz.

It was in the late nineteenth century Germany that Helmholtz began experimentally studying vibrating bodies such as strings, columns of air and solid resonating surfaces. When these bodies are vibrated they not only produce what is called the fundamental note but also a number of other notes of higher pitch that result from secondary vibrations that are superimposed on the fundamental. These are known as overtones or harmonics and were mentioned earlier in connection with interference effects.

Let us take the specific example of say a vibrating string tuned to the note of C. This will also produce a series of fainter overtones that will include the notes G, E, D and a note in between B flat and A. If this last note is treated as an A then these overtone notes and the fundamental C, if re-arranged, create one of the diatonic scales: namely the pentatonic one C D E G A.

Helmholtz erroneously thought he had discovered the underlying physical and rational basis of the Western diatonic scales. However, besides the problem of the already mentioned A/B flat note, the overtone E is of a slightly lower pitch than the Western tempered one. Moreover, the overtone series is infinite and so creates such an enormous number of notes that literally any scale can be concocted from it. In fact Helmholtz rather demonstrated that the tonal overtone series is a continuum, which, like rhythmic ones, can be divided up in any number of ways. So it is rather we, or rather musical cultures, which decide where the discontinuities should be placed: which in turn determines the notes of a particular scale.

The European twelve-note tempered scale, for instance, was specifically contrived to deal with the vogue for modulation. But if there is an almost continuous spectrum of tones within any octave, this means that there are cracks in between the twelve keys of a piano or frets of a guitar that make up an octave. Helmholtz himself believed that twenty-four notes to the octave would have been a better number. The American composer

Harry Partch thought forty-three would be even more accurate and even built a piano with that number of “microtone” keys to the octave.

In order to have a notational system that attempts to handle all the nuances of scales, Ethnomusicologists have devised a system that goes even beyond Helmholtz and Harry Partch’s microtone scales. This “cent” system divides every semitone into one hundred. Which means the octave has twelve hundred cent divisions. Of course the bottom line is the smallest note that the human ear can distinguish, which the cent gets close to – but not close enough for those studying bird and animal sounds. For this researchers have to use sonometers that produce graphical sound-spectrographs as continuous waves<sup>251</sup>.

In short, as there is a continuous spectrum of pitches there can be no single and precise musico-mathematical theory that can be applied universally to all musical scales. The combinations of notes that are considered harmonically pleasing or consonant, rather, depends how each society or historical period breaks up and re-arranges the tonal continuum. Scales are therefore culturally bound conventions which, with hindsight, we can analyse mathematically, but only with varying degrees of precision.

Furthermore, cultural relativity not only affects tone-scales but also the perception and classification of colour. As every schoolboy knows, colour experiments with prisms by Newton and others demonstrated that light break downs into a rainbow-like continuous frequency spectra. In these spectra different colours blend and merge into each other, generating an enormous number of differing hues. In other words, colour spectra, like tonal one, are almost infinitely dividable.<sup>252</sup>

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<sup>251</sup> This instrument presents relative pitch-frequencies as wave-forms on oscilloscope screens and graphical paper. As waves are continuous, any number of pitches can be extracted from them, far more than the twelve hundred divisions of the octave provided by the Cent System.

<sup>252</sup> In the West we divide up the light spectrum into our particular named and categorised colours of the rainbow. However African pygmies have no name for blue but many for the various hues of green, for they inhabit deep forest and so rarely see the sky but rather have hundreds of names for the various green colours of the numerous plants that surrounded them. Likewise the Inuit

So whether tonal or colour spectra it is from these continuums that different societies choose and name their own particular discrete cultural colours and tones: which are therefore cultural conventions.<sup>253</sup> Nevertheless, in actual reality the graduations between colours or between tones are so fine that within any given culture a great painter can always invent a new hue, a great singer can always hit an unusual microtone, and a great musician produce a new vibrato around a fixed tone.

### *Conclusion*

In traditional Africa no single rhythm or deity hogs all the limelight, carvings exhibit a plurality of perspectives and several calendrical systems overlap. All this implies an even-handed distribution of symbolic weight – in short an African relativistic view.

This is all quite different from the approach of European classical science that attempted to reduce all natural phenomena down to a few final laws and ultimate truths. Up until the twentieth century literally everything had to dance to the limited and mechanistic tune of Newton and Descartes. Even European polyphonic music went monodic and had to fit into the laid-down chord progressions and bar-lines of the score-sheet and metronome.

This single-minded view of things was, however, put out of gear by theories that emerged in the late nineteenth century that were of a more multivalent and relativistic nature. Astronomers began telling us that as we can only glimpse a tiny part of the cosmos. Researchers like Young, Maxwell, the Curies, Rutherford and Bohr discovered that there are no fundamental material building bricks but rather an energy dance of matter-waves and probability states spread out in time and space.

Ernst, Lorentz, Fitzgerald and Einstein on the other hand demonstrated that there are no absolute space and time co-

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(Eskimo) have an enormous number of terms for white snow which forms their terrain and building material.

<sup>253</sup> If all the possible spectral colours or acoustic tones are just simply randomly mixed together they produce white light or white noise.

ordinates either. Rather space-time is a higher-dimensional entity that can be dilated and twisted and offer a multiplicity of orientations, depending on each unique point-of-view. Observers therefore define their own space-time. All this is reminiscent of African polyrhythmic music with its flexible time and numerous angles of entry.

Relativistic ideas have also come from neurologists and psychologists who have been unable to pinpoint consciousness down to the brain's hard wiring or to a single seat of consciousness. Rather they have discovered non-localised memory templates, modular visual/sensory systems, shifting gestalts, levels of the mind, multiple drafts of consciousness, archetypes, complexes and contrapuntal "mind spiders"<sup>254</sup> that spin cross-thoughts: all reminiscent of the polyphony and multiple souls of Africa.

Furthermore, cyberneticians have recently become interested in the modular parallel processors that have been discovered in living nervous systems and are being used in new super-computers. They have discovered that informational power is not solely a result of the complexity of hierarchically organised electronic or organic brains, but also a result of their enormous "connectionism". As with everything from the subatomic energy-dance to psychological dynamics, it seems that cross-connectionisms generate power and heat. Again this takes us back to notions discussed earlier on the frictional and permutational "heat" found in relativistic African symbolic arrangements: from cross-rhythms to polytheistic pantheons.

As will be discussed later, some areas of the social sciences have also been affected by relativism. Comparative field-studies of differing societies have resulted in the suggestion by cultural and linguistic relativists that no one culture and language is truer than any other. These, they claim, are all just different takes on reality. In the above discussion we touched on just two aspects of this cultural relativism: namely the way different societies perceive and classify tonal scales and spectral colours.

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<sup>254</sup> I.e. Dennett's "multiple drafts" and Minsky and Jones "mind spiders".

With so much polyphony and parallelism, and so many perspectives around in the modern sciences, it is no wonder that our epoch is sometimes referred to as the “age of relativity”.

Scientific certainty has therefore given way to a modern view of the world which, like the old African worldview, is a relativistic one of multiple and equitable perspectives. Who can corner a gestalt, finalise a field, pinpoint a vibration or find bedrock in Einstein’s space-time? Furthermore, with ever-expanding cosmological space and time, and ever-vanishing atoms, who can claim to hold the ultimate yardstick and timepiece to the universe?

## THEMATIC CHAPTER THREE: HIDDEN SPACE

It was observed in Section One of the book that hidden spaces and structural breaks are built into the music, myths and worldviews of traditional Africa.

Rhythmic patterns are spread out by syncopated offbeats and traditional African socio-ritual order is punctuated by disorderly liminal breaks from which spring new phases of social and personal life. Furthermore, in old African religions<sup>255</sup> the universe is born out of a void and there is no supreme being dominating the whole spiritual realm. The African creator-god is rather the silent backdrop against whom the rest of the cosmic cast ad-libs. In other words it is the spirit rather than the letter of the musical and mythical law that mattered in traditional Africa.

Gaps, breaks, syncopations and other forms of hidden space in African and pre-industrial socio-symbolic arrangements therefore serve two functions. Firstly, this spacing patterns out structures, creates contours and defines distinct stages. Secondly, the silent offbeats, swinging intervals ambiguities, divine ground and other “ventilations” supplies the fixed frameworks of symbolic structures with internal give and play.

During the European Enlightenment and Industrial Revolution this old syncopated notion of the balance of sound and silence, order and disorder, being and non-being, was largely lost. Rather, the material side of things became overstated, society became factory-regimented, noise characterised progress, the immensity of space became fearful and the spiritual side of mankind was considered irrational and irrelevant.

However, from the late nineteenth century and early twentieth century this lopsided attitude began to be systematically questioned by members of the scientific community. They discovered that seemingly solid structures and objective figures are riddled with or surrounded by emptiness,

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<sup>255</sup> And indeed those of many ancient or pre-industrial societies.



“anti-structure” and ambiguity which, in turn, provide room for flexibility and innovation.<sup>256</sup> In short swing.

It is this exploration of these fertile structural spaces and discontinuities by psychologists, philosophers, mathematicians, cyberneticians and musical theorists that we first turn to in some detail. This will be followed by examining areas of modern physics and astronomy in which the same double-edged idea of the infinite potentiality of nothingness holds true: whether quantum gaps that contain every possible and virtual atomic state of being or, at the other end of the scale, a cosmos dotted with Black Holes within which anything is possible. But first we will turn to the inner realm of the mind.

### ***The Modern Rediscovery of the Inner Realm: The Physiological Unconscious and Existential Emptiness***

Late nineteenth-century psychology was largely a scientific, albeit introspective, reaction to the prevailing scientific view that human beings were automata, consciousness was an excretion of brain tissue and free will an illusion.

It was this arid and mechanistic view of consciousness that nineteenth century Romantics writers and artists such as Friedrich Nietzsche and Arthur Schopenhauer objected to when they emphasised the irrational and intuitive thoughts or will that lay below the everyday world of the ordered ego.<sup>257</sup> The fact that the Romantics anticipated the psychological notion of an unconscious is intimated in poetic expressions such as William Wordsworth’s “caverns of the mind” and Samuel Taylor Coleridge’s “twilight zone of consciousness.” It was in an era of such poetic insights that psychologists began to scientifically expose an undifferentiated shadowy level of the mind.

William James for instance called this new dimension of the mind “fringe consciousness” whilst Freud referred to it as the

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<sup>256</sup> This puzzling dual nature of the gaps and discontinuities in structures being both empty gaps and limitless plenitudes is neatly summed up by the inverse relationships between zero and infinity: infinity equals one over zero, whilst zero equals one over infinity.

<sup>257</sup> In spite of the word “will” having a usual connotation with conscious wilfulness, it meant something much broader and deeper for these two German writers: close infact to the notion of an unconscious.

subconscious Id which, as noted earlier was the location of the primal sexual drive or Libido. Indeed, this Austrian psychoanalyst became notorious when he showed the genteel European middle-class that far from outgrowing their irrational and erotic desires they had simply repressed them in the subconscious, from where they occasionally emerged as pathological phobias, fetishes and slips of the tongue. Freud was therefore of the pessimistic opinion that the free-flowing Libido was fundamentally antisocial and in a constant state of war with civilisation and its internalised aspect, the Super Ego.

Other pioneering psychoanalysts, however, saw the disordered subconscious in a more healthy light. Otto Rank, for example, believed great artists were the ones who were able to successfully tap the unconscious mind in a creative way. Similarly, Jung considered the subconscious to be the source of both individual and social mental inspiration and he put forward two reasons for this positive view.<sup>258</sup>

Firstly, immediately below the individual unconscious is the collective unconscious that links up all of humanity and which,<sup>259</sup> Jung believed, generates the revelations of prophets and seers, and at a more mundane level the dreams and fantasies of his patients.<sup>260</sup> Even Freud, although disagreeing with Jung on many points, recognised this state of blissful oneness with the world, which he called the "oceanic" feeling.<sup>261</sup>

Secondly, far from being on a collision course with society, Jung believed that unconscious psychic energy could be transformed into socially acceptable channels through the mediation of symbols. These, unlike fixed signs, are non-specific and flexible and can therefore handle the raw chaos of the unconscious. Through their ability to encapsulate ambiguity, symbols can thus act as bridges between the disordered unconscious and organised mental pathways. One can imagine

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<sup>258</sup> For Rank see 1968 and for Jung (1956, 1959 and 1964).

<sup>259</sup> Deeper still was what he called the "chthonic" level where the organic meets the inorganic physical basis of the brain.

<sup>260</sup> Particularly pertinent were images of going underground or under water.

<sup>261</sup> Freud however did not equate this with the collective unconscious but rather from the state of a foetus floating in its mother's watery womb.

symbols as being bubbles of primary undifferentiated subconscious energy strung out like beads along psychological networks. However these beads are in a sense structurally hollow, and so provide play and swing to otherwise brittle mental constructions.<sup>262</sup>

It is not only psychologists who rediscovered the old knowledge of an inner unconscious space within routine existence, for the same conclusion was reached by a philosophical movement known as Phenomenology, which has its origin in Kantian philosophy. But whereas the categorical imperatives of Kant (and modern Structuralism) were considered innate, the nineteenth century German phenomenologist philosopher Edmund Husserl<sup>263</sup> suggested they were learned by children as part of their particular social and cultural worldview or "Weltanschauung": equivalent to what the early French sociologist Emile Durkheim called "collective representations".

If these categories and representations were social constructs that were internalised by infants then, according to Husserl, it should be possible to unlearn them and return to the state of being from which they ontologically arose. He referred to this trick of suspending the natural adult everyday point-of-view "reduction", which enabled him to appreciate that it was initially an individual's pre-logical consciousness that creates the various worldly categories and representations. He called this primary pre-reflexive state the "transcendental ego".

During the twentieth century rapid change and cultural relativism put an end to so much of the solid certainty of the previous century and as a result many thinkers, not just a few philosophers like Husserl, began to confront the existential dilemma of the arbitrary nature of psychosocial categories that had to be continually re-created. The sociologists Owen Barfield and Peter Berger who wrote on this process of internal subjective creation and objectification called it "figuration" and "reification" respectively.<sup>264</sup>

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<sup>262</sup> Jung would of course call these established mental networks, pathways and constructions "archetypes".

<sup>263</sup> See Husserl (1973).

<sup>264</sup> See Berger (1966) and Barfield (1957).

Some welcomed this new found liberation of the pre-reflexive consciousness, but others could not handle its formlessness or emptiness and so went into a state of nervous and existential shock; for with so many possibilities how could things be mentally fixed and solidified by individuals. Erich Fromm (1941) referred to this anxiety produced by glimpsing this internal emptiness and consequent loss of supposedly solid categories as the "fear of freedom".

This panic or loss of nerves was not helped by the fact that older metaphysical symbols that linked the inner and outer, the body and soul had been gradually eroded from Enlightenment times. For instance the old European notion of man as a microcosm harmoniously composed of both heavenly spirit and earthly matter, lost its punch. Instead the self-confident industrial age deemed the spiritual as irrelevant, the unconscious as demonic, the spontaneous as uncivilised, space as frightening and quietude a waste of time and money. None of this prepared Western mankind for the discovery of subconscious existential emptiness.

### ***Mathematical Space – Zeros, Limits and Incompleteness***

A topic that seems much more definite than the inner workings of the mind is the logic of mathematics. However, even this supposedly firm corner stone of hard science is full of irrational gaps and holes. For example, one of the greatest discoveries in mathematics was the concept of the naught, cipher (i.e. blank) or zero that was invented in ancient India and symbolised as an encircled void.<sup>265</sup>

Although the useful zero symbols neatly bracketed off one type of mathematical emptiness, another sort of ambiguity has even to this day not been successfully dealt with. This arises from the fact that any arithmetical sequence of numbers must be discontinuous, in the sense that there have to be gaps between numbers, which in turn produces uncertainty when dealing with

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<sup>265</sup> Despite being nothing, the concept of zero gave European mathematicians (via Islamic scholars) the decimal space needed to overcome the cumbersome Latin numeration used until medieval times.

infinitely large numbers and infinitely small numbers (like fractions).

This problem was first raised over two thousand years ago by the Greek thinker Zeno of Elea who demonstrated that mathematical division when applied to motion led to the paradox that it would take an infinity of time for an object or person to move between any two points.<sup>266</sup>

This puzzle was temporarily solved during the Enlightenment by the integral calculus of Isaac Newton and Gottfried Leibniz. This handled huge infinities and tiny infinitesimals by sealing them up in limits, which could be counted and manipulated. But this mathematical trick never satisfied the nineteenth century mathematician George Cantor. He tried to get around this whole conundrum by creating a mathematical system based on sets instead of arithmetic sequences, such as the decimal or binary systems which are axiomatic: that is generated by rules simpler than themselves. Cantor wanted to get rid of all preconceived rules and axioms and just base his mathematical sequences on the relationships between groups or sets of things. So if there was an exact one-to-one or "cardinal" relationship between two groups of things, say six elephants and six carrots, one could at least say they had the same cardinality of six.

However, even this apparently straightforward concept created problems when applied to sets with an infinite cardinality, for Cantor discovered an infinity greater than infinity. Cantor called the normal kind of infinity Aleph Null that is based on one-to-one relationships between integers and rational numbers. For instance, an infinite number of elephants and carrots. But a problem arises if this infinity is added to the infinite set of all irrational numbers such as pi (22/7), the square root of two and other recurrent never ending numbers.<sup>267</sup> In some cases Cantor obtained a bigger infinity than Aleph Null

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<sup>266</sup> For example, if a person is asked to walk a mile he or she will theoretically first walk half a mile, then half of that and then half of that again; with each successive half-stage ultimately becoming infinitely smaller. As it will take an infinite number of such infinitely smaller steps it should, according to Zeno's Paradox, take an infinity of time to walk a mile.

<sup>267</sup> Integers are whole numbers like 1, 2, 3, 4, 5, etc. and rational numbers are fractions and ratios of integers.

that he called  $C$ , or the Cardinality of the Continuum. In other words, never-ending irrational numbers fill all the gaps between integers and rational numbers, converting discontinuous mathematical sequences into a seamless field or continuum.

We can put it another way. Conventional arithmetic sequences have to contain gaps and breaks, which in turn contain infinity of potential numbers such as recurrent and nested infinitesimals. No amount of limiting or bracketing can ultimately remove these. In a sense there is a Zeno's paradox in the gaps between every single mathematical number however small, for like these can be divided into infinity of ever-smaller steps or slices.

The later mathematician, logistician and philosopher Bertrand Russell (1967) also noticed this puzzling feature of mathematical infinities emerging out of any discontinuous sequence of numbers. This was presented in his paradox of the "set of sets" in which Russell presented two sets, each of which contained the other as an alternative. This generates infinity of alternatives within alternatives, spiralling away into endless regress. He called this the Reflection Principle as it is like the infinite series of reflections in two mirrors. This system of wheels within wheels within wheels is known mathematically as a recursive or fractal system. As noted, Zeno of Greek antiquity came up with it in his paradox. Likewise in the equally old Chinese Yin and Yang mandala it is represented by its interior dots within dots within dots and so on ad finitum.

As if all this ambiguity were not enough, in the 1930's Kurt Gödel proved that all arithmetical systems or theories of the Alpha Null variety must, as they are less than  $C$ , be incomplete. In fact he put mathematical systems into a double bind, for however fine their detail and divisions they all, at some place or another, contain gaps and limits: i.e. they are incomplete.<sup>268</sup> On the other hand the mathematical continuum  $C$  cannot by definition contain discontinuities, which means that no

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<sup>268</sup> This incompleteness was noted in the previous theme in connection with the digital sampling of a song always being less than the analogue continuous-wave recording of the same music, due to the gaps between the digital samples.

consistent results can be obtained from it and it is therefore useless for practical purposes.

This last point is not so surprising as the mathematical continuum, like any other continuum, is a ground or plenitude which can generate an infinity of figures, forms, sequences and theories. The mathematical continuum  $C$  can therefore no more be consistent than the unconscious mental ground can be rational, or the pre-reflexive state can be logical, or non-being be exact. As a result, all useful mathematical theories must be have intervals bracketed into them and thus be incomplete. However, these brackets, limits, and gaps can be put in many different places within the mathematical continuum, so generating an enormous number of internally consistent and self-contained mathematical systems, each useful for specific tasks. A corollary to this is that as all mathematical systems are incomplete in one way or the other, no single system can be a hundred percent true for everything.<sup>269</sup>

This last point was blow to the early twentieth century philosophical schools of Logical Positivism and the Vienna Circle who wanted to tidy up philosophy and language into a precise and all-embracing mathematical system known as Symbolic Logic. However, the infinity containing gaps in Cantor's Mathematical Continuum and Gödel's Incompleteness Theorem got in their way.

As will be discussed below ambiguity and incompleteness also crop up when mathematics is applied to musical scales.

### ***The Pythagorean Comma: Mathematico-Musical Incompleteness***

As we saw in the previous Thematic Chapter on relativity, Helmholtz's mathematical attempt to ground scales in a single rational basis failed due the fact that the overtone system is not made up of discrete notes. It is rather a fuzzy spectrum containing a huge range of frequencies from which differing societies can choose their own particular scales. In short his

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<sup>269</sup> On this question of mathematical ambiguity see D. Hofstadter's fascinating 1979 book.

theory came up against the problem of the continuum and mathematical incompleteness.

Another and much earlier flawed attempt to apply mathematics to music are the ancient scales whose sequences are based on ascending cycles of octaves and fifths. As we will see this works out neatly in abstract mathematics, but not in actual concrete practice, as there is a difference between mathematical systems based on ascending fifths and those based on ascending octaves.

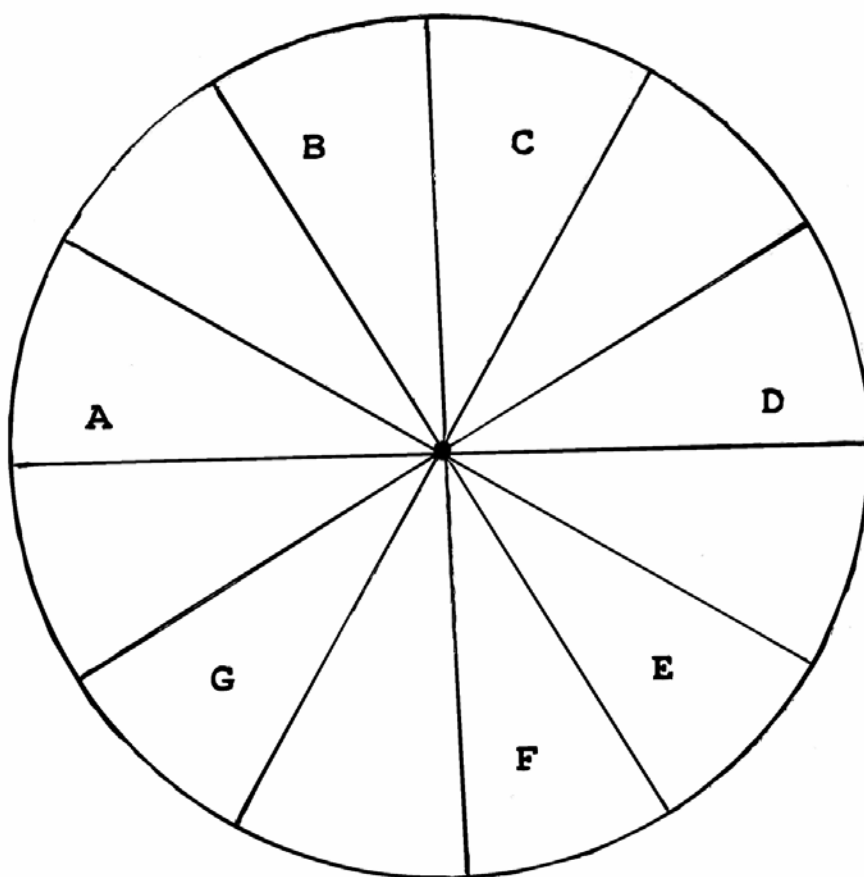
Let us start with this musical-mathematical conundrum by going back to the ancient Egyptian and Babylonian pentatonic and heptatonic scales built on an ascending series of octaves and fifths. These scales were based on the two most prominent overtones (or harmonics) of the vibrating strings of old instruments such as the mouth-bows, monochords, harps and lyres. These overtones are the octave and fifth intervals above the instruments fundamental note or tone of any individual string of the instrument. The fundamental note is heard when the string is vibrating freely along its whole length. However the octave and fifth above it appears when the string is touched or stopped exactly halfway and two-thirds of the way respectively along its length. If the full length of the string were tuned to say our modern key of C, then half its length would produce the next higher octave of C, and two-thirds its length would produce the fifth tonal interval above the fundamental C, which is G. Because for every ascending octave the string is halved, and for every ascending fifth it is reduced by two-thirds a mathematical conundrum occurs that will be explained later.

This clear relationship between pitch and length so intrigued the ancients that they considered these two intervals magical and pleasingly harmonic or consonant and so built up scales from them. For instance and using modern terminology, if one moves up from say F in ascending fifths (i.e. up seven semitones) one obtains the notes F C G D A which, if rearranged as C D F G A, gives a five-note or pentatonic scale. If the next two ascending fifths are then added, namely E and B, these can be fitted into the pentatonic scale to make it the seven-note heptatonic one of F C G D A E B. Moreover, these ascending



fifths can be continued even further, which adds the notes F sharp through to A sharp. This creates the following twelve-note chromatic scale: F C G D A E B F# C# G# D# A# – which ends up back on F again<sup>270</sup>, but of course at a much higher octave than the original: in fact seven octaves higher.

The reader might like going around this musical clock so-to-speak for himself or herself using the Figure below. Always move clockwise seven intervals at a time, which means in ascending fifths. In my case I have started on F, but it could be anywhere on the circle. Wherever you start you will always end up from where you began. During this time, however, you will have made twelve clockwise moves in fifths but also will have gone completely around the clock seven times.



*Figure 47: Clock figure of the circle of octaves and fifths*

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<sup>270</sup> Or E sharp which is the same as F.

*N.B. If one moves in the reverse direction one can get the same sequence as made from ascending fifths by moving down in fourth (i.e. five semitones). This follows the well-known musical rule that an ascending fifth is exactly the same note as a descending fourth but at a lower octave.*

Once you make this musical circuit and end up where you began you will know that seven octaves and twelve fifths come to the same point. It seems obvious if one realises that an octave is made up of twelve semitones interval and a fifth contains seven. For then both seven octaves (each of twelve semitones) and twelve fifths (each of seven) multiply up to exactly the same number of eight-four semitones.

So far so good. We have a theoretical model that has produced three scales (the pentatonic, heptatonic and chromatic) that are based on two harmonious or consonant pitch intervals. Moreover, they involve three numbers that had a mystical significance to the ancients: namely twelve, five, seven. All this perfection seemed to suggest that a divine hand was at work.

However, from the practical evidence of tuning strings it was realised even in ancient times that the two ascending systems did not quite match, as in actual practice the twelfth fifth is higher than the seventh octave by a tiny discrepancy known as the "Pythagorean comma" of roughly a quarter semitone.

The actual reason for this discrepancy is due to do the incompleteness of arithmetic sequences. As noted earlier, for every octave or a fifth up the scale a vibrating string is reduced to half or two-thirds of its original length respectively. For the full cycle of fifths this means, therefore, that the string is progressively halved seven times (ascending octaves) and progressively reduced by two-thirds twelve times (ascending fifths). Put mathematically the octave cycle is therefore  $(1/2)$  to the power 12 as compared to the fifth one that is  $(2/3)$  to the power 7. Due to mathematical incompleteness these two sequences, although describing the same phenomenon (i.e. ascending scales) never equal each other. In fact these two arithmetical sequences will never produce the same results even when multiplied an infinite number of times.

Not knowing the mathematical reason for this blemish in the divine plan the ancients turned it into a virtue. They did this by claiming that when the creator fashioned the universe in all its harmonious symmetry, it decided, in the case of music at least, to throw in a little extra bit of creation and give us a bonus.

If the ancients had been in the habit of modulating, that is switching keys whilst playing the same piece of music, this Pythagorean Comma would have created a problem. As it was they never did mix keys (or what they called modes), indeed it was a taboo to do so. When they did want to change the mode for another song they either re-tuned their instruments or used different ones altogether.

In seventeenth century Europe, however, modulating the same piece of music into different keys became fashionable, and so the Pythagorean Comma became troublesome. In one or other of the distant keys that their modulating musical pieces branched out into this quarteritone would appear as an unpleasant sounding dissonant or "wolf note". As a result and after several centuries of experimenting the equal tempered scale was put together by a number of baroque composers<sup>271</sup>. They divided the excess quarter semitone and evenly spread it over the twelve semitones of the octave, so that between any particular semitone this was too small to be noticed.<sup>272</sup> Incidentally, this tempering or tampering with the older natural scales explains why piano-tuners first get the strings in perfect tune using natural octaves and fifths, and then ever-so-slightly and quite purposely mis-tune some of the strings so as to temper them.<sup>273</sup>

All this effort to create tempered scales and adjust pianos is simply a result of the mathematics being incomplete and so

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<sup>271</sup> These include Jean-Philippe Rameau, Johann Sebastian Bach and his son C.P.E. Bach.

<sup>272</sup> This was a twelfth of a quarter tone: i.e. almost one fiftieth of a note. Far too small for the average human ear to notice.

<sup>273</sup> This results in a limitation for the piano and other Western instruments that use the twelve tempered semitones. They cannot play all the notes of the old so-called "natural harmonic scales" discussed earlier, nor can they play the seventeen divided octave of the Arabic scale, the twenty-two note Indian scale, or the flattened thirds and sevenths of African American blues and jazz which literally fall between the cracks of the piano keys.

capable of producing two arithmetic sequences (i.e. based on ascending octaves or fifths) that are each internally consistent, but do not exactly correlate with one another.

### *Cybernetic Silence and Computer Swing*

Computers utilise binary codes that, as we have seen, contain mathematical spaces or zeros. Furthermore, it was noted in the previous chapter on relativism that sophisticated computers and the human brain are made up of parallel modular systems; what Professor Marvin Minsky figuratively called “mind-spiders”. We can extend this idea also include “shadow mind-spiders” that exist hidden in the syncopated spaces and gaps between the electronic and neuronic cross webs.

Some years ago the occurrence of such cybernetic shadows and offbeats was also hinted at by Professor Higgins of Sussex University. He tried to teach computers to recognise rhythms by programming them to register the longest and most emphatic notes, and then using these as cues for particular rhythmic bars. However, he came up with a difficulty in the case of syncopated music with its silent offbeats and unstressed main pulses. For this he realised he would therefore have to develop programmes which not only recognised overt patterns of relative sounds but also ones of relative silence. Which takes us right back into the African musical mode.

On this topic of cybernetic silence and understatement, Doctor Kevin Jones has suggested a novel way of reading music, which utilises not only the presence but also the absence of scored notes. Normally the eye follows the notated line of musical score-sheets from left to right and top to bottom. To these two dimensions on the flat printed page of the score-sheet Jones proposes that we add a third, this being the thickness of the scorebook, one page behind the other. If then, either through imagination or computer simulation, we remove the material of the paper, the naked notes would be left as a three-dimensional matrix percolated with holes. The shape of this musical three-dimensional musical sculpture or “sound-scape”

would therefore be a foamy object of highlighted sounded notes and absent silent intervals.

In some ways this three dimensional sound-scape idea is rather similar to the two-dimensional acoustic mandala<sup>274</sup> of an African Beat, depicted in Chapter One as cyclical patterns of rhythmic sound and silence. In both this representations and Jones' sound-scape the totality of the melodic or rhythmic contour can be appreciated instantly at a glance rather than in a sequential linear fashion.

Another example of the growing technological interest in the hidden silences within overt rhythms comes from the area of computerised drum-machines. These new percussion instruments produce rhythms based on the precise and minuscule quantisation of time: in fact a sophisticated but much tinier electronic equivalent to the "density referent" referred to earlier in connection with the analysis of African rhythms. Because of the tendency of early drum-machines to sound too exact and mechanical, musicians later humanised them. And they were able to do this because the basic quantised electronic pulses became so fine that rhythmic divisions, like the nested infinitesimals of mathematics sequences, began to blur into a continuum. To put it another way, the internal microtime within the electronic scaffolding became so subtle that it turns into an almost smooth and elastic rhythmic field that can be pushed and pulled in a multitude of ways.

So creative "techno" musicians are now able to add "feel spectrums", "tempo perturbations" and other electronic ways of fractionally displacing the attack and delay of a drumbeat in relation to the overall tempo of the music. The main tempo, however, is still geared to one particularly pronounced and exactly regulated metronomic pulse, but this is removed from the mix after the more subtle and humanised drum and percussive beats are added.

By doing this, these hi-tech innovators artificially simulate human ambiguity and leeway. In a digital way they have hit

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<sup>274</sup> Strictly speaking and as noted in Chapter One when we applied spatial metaphors to African music, the Beat is not really a two-dimensional circle but a three dimensional spiral or helix.

upon the old notion of African swing: that the surrounding silent offbeats in between electronic notes becomes, when quantisation is high enough, a field-continuum that provides an enormous space for artful rhythmic exploration.

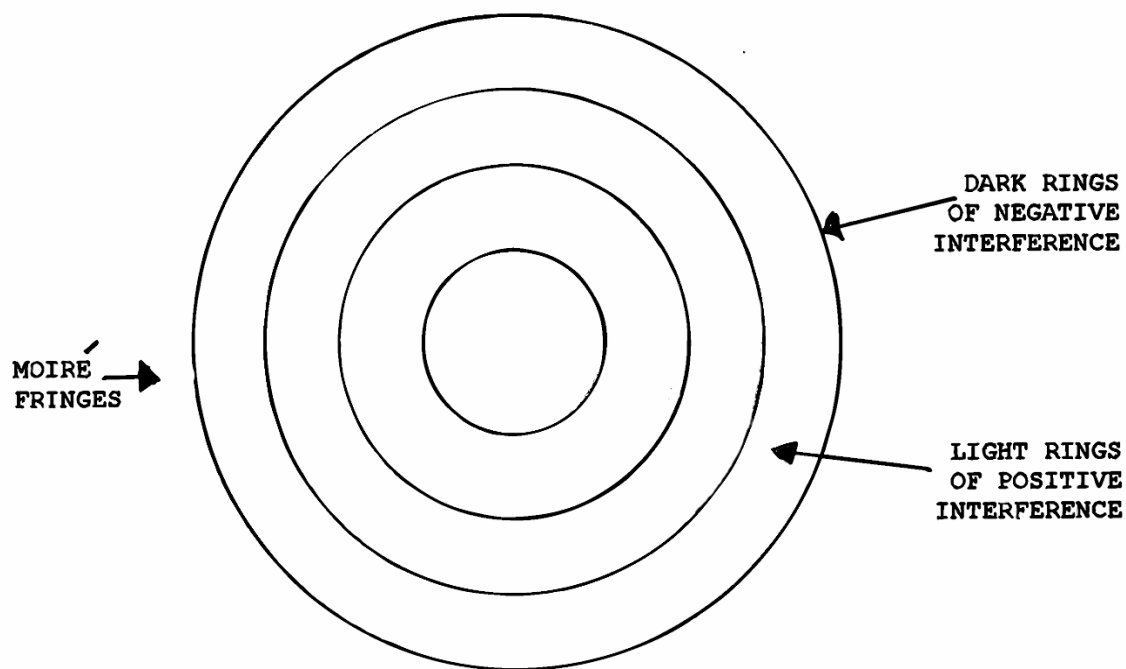
However humanised, electronic microtime swing only involves a single meter and percussive time-line, whereas African music is polyrhythmic and poly-metric. Consequently if African percussion is electronically produced there are multiple crosscutting rhythmic fields that can be delayed, compressed and combined together to produce interesting and complex auditory illusions. Some African music-computer experts are already working on electronically simulating these.<sup>275</sup>

### *Atomic Gaps*

More than one hundred years before the English physicist Lord Rutherford discovered that the atom consisted mainly of empty space, Newton's rock-solid corpuscles had already begun to crumble away. This occurred when Thomas Young carried out defraction experiments which showed that light-energy is not transmitted as discrete particles but as diffuse waves. His experiments involved simply passing pinholes of light onto a screen. Naturally with one pinhole one dot of light fell on the screen. However, with two pinholes close together, instead of two overlapping dots of light, Young obtained a circular pattern of alternating light and dark bands called moiré fringes. These are made by the positive and negative interference of the two tiny streams of light, as illustrated below.

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<sup>275</sup> For instance Doctors William Anku and Kongo Zabana of the Music Department of the University of Ghana at Legon.



*Figure 48: The interference pattern of two tiny beams of light*

This Figure exactly parallels what was described earlier when ocean waves pass through small gaps in a harbour wall. They emerge as standing waves with super-crests and super-troughs, the crests being the equivalent to the white rings in Young's experiment and the troughs the dark ones. Another every-day example of these moiré fringes appears when two fine meshes (like mosquito-nets) overlap and create bands of light and dark that shift about according to the movement of the viewer's head.

As already discussed, by the end of the nineteenth century James Maxwell had proven that all forms of electro-magnetic radiation, not only light, were wave-like. Then in the 1920's Louis de Broglie, Erwin Schrödinger and Max Born showed that even solid matter was ultimately composed of subatomic waves.

However, while one school of physicists was busy converting solid substance into spacey waves, another was working in the opposite direction. During the early twentieth century, the problems posed by the wave approach (concerning black body radiation and the photo-electric effect) had led physicists such as Max Planck and Albert Einstein to suggest that radiant energy was not transmitted in smooth continuous waves, but in packets

of energy. They called these packets “quanta”, the smallest being a product of a tiny amount of time and energy, called a Planck’s Constant. Although seeming to return to a re-vamped Newtonian particle-type theory, Planck and Einstein’s idea did still involve the notion of space, in the sense that between each quanta energy bundle there is an interval called the quantum gap.

Other physicists subsequently extended quantum theory from radiant energy to subatomic matter which led to the growth of a whole new discipline known as Quantum Mechanics or Particle Physics. This not only put quantum gaps into solid matter but, much to Einstein’s horror, randomness as well. This atomic imprecision was introduced in 1927 by the German physicist Werner Heisenberg who, in one of the conclusions of his famous Uncertainty Principle, stated that below the minuscule level of Planck’s Constant anything could happen. For example, particles such as photons, protons and electrons could, through quantum jumps, suddenly and randomly disappear and reappear in another part of the atom, or right outside it altogether, theoretically even at the other end of the universe. This elusiveness explains radioactive decay, when sometimes and just by chance a proton can quantum jump outside the nucleus. It is through this so-called “tunnelling effect” that atomic particles can escape the immensely strong internal nuclear bonding forces (i.e. gluons). It was this unpredictability factor in the quantum interpretation of matter that made Einstein declare his famous remark “that God does not play dice with the universe”.

In spite of Einstein’s protests, particle physicists went on to elaborate their chancy sub-quantum world, made up of imaginary atomic particles called “virtuals” existing in “jiffies” of borrowed microtime available below Planck’s Constant. The shorter the jiffy the greater the potential energy and mass of the virtual particle. Furthermore, it was realised that this seething world of ghost particles not only existed in subatomic space but also in the high vacuum of inter-stellar space; in short, the whole universe is seething with virtual realities.



Whether in atomic or astronomical space these virtual particles act as energy bridges between real ones. Ephemeral networks of such phantom particles continually appear as they transfer energy about, before promptly vanishing back in virtual non-existence. However, if some of the virtuals can hang on to this energy for long enough to get above Planck's Constant, they can then begin to exist as real particles in our own normal macrotime. Conversely, real particles can become virtuals by losing energy. Indeed, real and virtual atomic particles are constantly switching roles as they transfer energy about.

To this churning realm of real and virtual particles, Paul Dirac added real and virtual anti-particles. In 1928 he suggested that every subatomic particle has a corresponding opposite or complementary anti-particle. The two partners have a figure-and-ground relationship to one another: such as positron and electron, proton and anti-proton. In addition, whenever these matter/anti-matter mirror images meet they mutually destroy each other.

In this scenario there is no such thing as empty space, whether between stars or atoms. What we think of as a void or vacuum is in fact full of virtual pairs of particles and anti-particles continually popping into existence and annihilating each other. In doing so, they create potential pathways for every conceivable type of atomic activity. This includes the transfer of light, heat and other forms of electro-magnetic energy, which therefore do not need the imponderable ether of the nineteenth century.

This idea of space being full of activity was depicted in Figures developed in the 1940's by the American physicist Richard Feynman<sup>276</sup> which shows atomic processes interacting in virtual states of being on a space/time (or energy/momentum) grid. A special example of a Feynman Figure is the mutual creation and destruction of a particle and its anti-particle partner. Because this can take place in even the highest vacuum of outer space, he called it a Vacuum Diagram.

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<sup>276</sup> As this book is so much concerned with African percussion it might be of interest for the reader to know that Feynman was an accomplished player of the Afro-Cuban "bongo" drums.

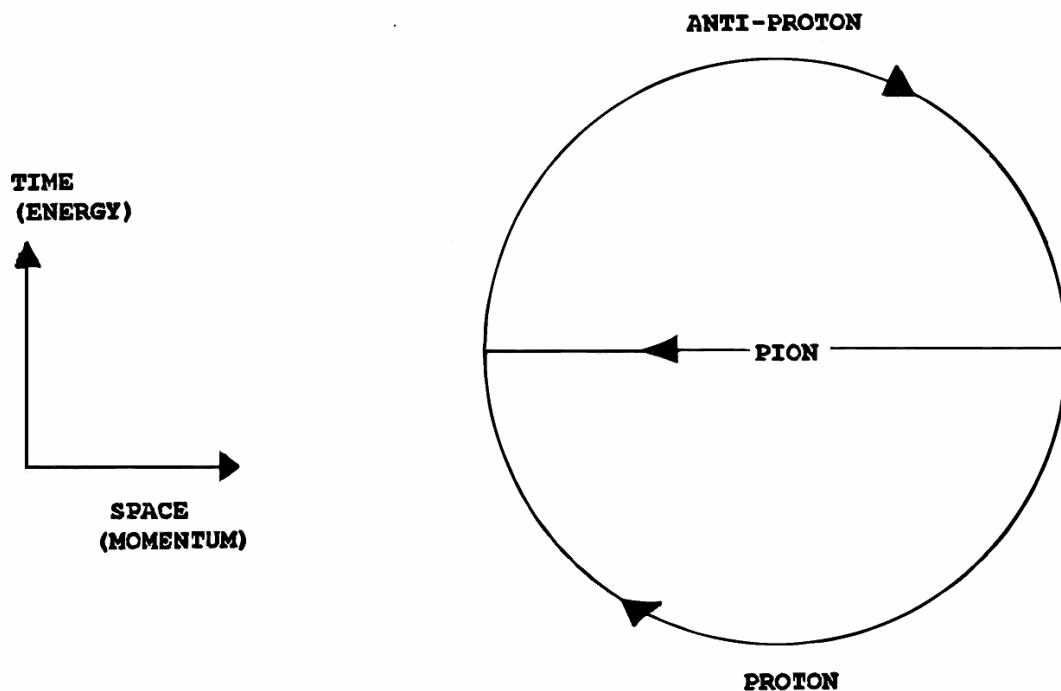


Figure 49: A Feynman Vacuum Diagram – a plenitude in space

Physical space is, therefore, not empty but is rather a plenitude filled with uncountable potential cycles of mutual virtual pair creation/destruction, as depicted in the above Figure.

Not only is astronomical space full of phantom atomic matter, but also the seemingly hard solid atoms of our planet likewise contain space. Indeed they are mainly emptiness, as the little matter they do contain is spaced out waves or as quanta of energy.

The relation between physical waves and musical waves has already been discussed. However, the quanta graininess of atomic structures also has musical parallels; for instance both the organisation of matter and music depends on discontinuities – in one case quantum gaps and leaps, in the other rhythmic intervals and silent offbeats. Furthermore, just as rhythmic intervals provide the space for internal swing, so quantum offbeat gaps provide a hidden ground state from which virtually every type of atomic configuration can emerge. Finally, just as virtual particles can borrow microtime to become temporarily real, so musical beats and notes can temporarily steal time from their rhythmic surroundings: a technique of delays and

anticipation known technically as “rubito” (Italian for “robbing”).

### *Cosmic Black Holes*

We have just noted that cosmic matter is separated out by inter-stellar void, albeit filled with a surfeit of virtual atomic activity. Another astronomical discontinuity is a Black Hole, an expression coined by the American physicist Professor John Wheeler to describe super compacted objects that have been discovered to dot the universe.<sup>277</sup> As will be discussed below, Black Holes are spherical barriers that totally seal off our normal space from non-causal chaotic areas that can reverse time, annihilate matter or create matter out of nothing. In short we are back to the idea of organised structures, in this case cosmological, being discontinuous. But first let us turn to Black Holes in more detail.

Black Holes are formed by dying stars, which have used up all their hydrogen fuel that produces energy (like a hydrogen bomb) as it fuses into helium. What happens next depends entirely on the size of the original star.

If the star is large enough<sup>278</sup> it goes Super Nova and explodes. What happens next again depends on the original mass of the star. If the star’s core is up to two and a quarter solar masses (Chandrasekhar’s Limit), it is compressed by the Super Nova explosion into a dense spinning Neutron Star or Pulsar. However, if the mass of the original star is above Chandrasekhar’s Limit then nothing can stop its core from gravitationally collapsing forever into a super-dense point or Singularity, in which matter and energy are squeezed into unity.

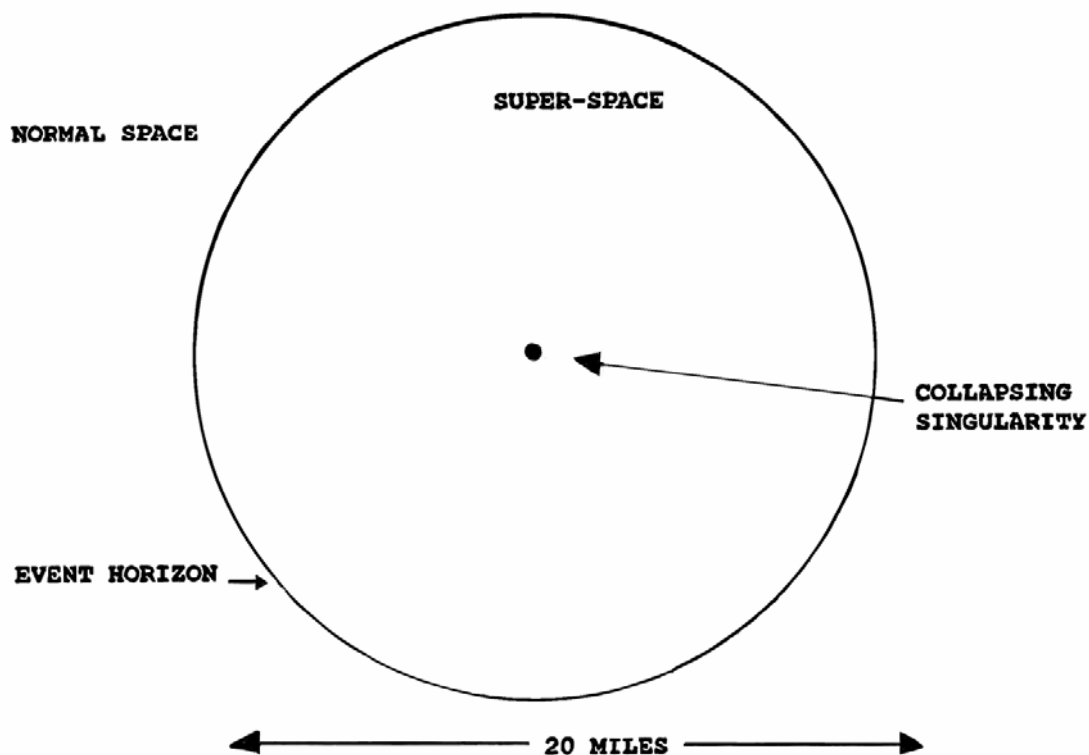
Around the infinitely receding Singularity gravity is so strong that the bubble of space-time around it gets sealed-off. The

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<sup>277</sup> On this topic see, for instance, J. Taylor (1970), I. Asimov (1980) and K. Thome (1994).

<sup>278</sup> If the star’s mass is less than about one-and-a-half times that of our own sun, it shrinks down to a tiny White Dwarf star. If it is greater, then the gravitational collapse and resultant friction produces enough heat to progressively fuse helium into the heavier elements. Finally, things get so hot that the star goes Super Nova, becoming brighter than a hundred million suns as it explodes and scatters debris about.

surface of this bubble is called the Event Horizon, from which nothing, not even light, can escape. In fact quite the reverse, for light (and everything else nearby) is sucked into this cosmic whirlpool: which is precisely why it is called a Black Hole. The actual size of this cosmic hole depends on the original mass of the star. A star of three solar masses, for instance, would produce a Black Hole of twenty miles diameter. We can see this in the following Figure.



*Figure 50: Cross section of a Black Hole*

Black Holes can, however, be more massive than the one depicted above, like the one at the centre of our own and the M 87 galaxy, which swallows whole stars and act as huge gravitational gyroscopes for these spiralling nebular systems.

Quite a different representation of a Black Hole (whether large or small) can be made using the light-cone model, which we discussed earlier in connection with Einsteinian and Newtonian space-time (Thematic Chapter Two on relativism, Figure 2). This is because a Black Hole, like Observer C in that Figure, also exists at the intersection of 45-degree sloping light-

lines. In addition, a Black Hole's Event Horizon is the place where its gravitational pull exactly counteracts the force of light (and other forms of radiant energy). Outside the Horizon light is able to escape, inside it is sucked in, whilst precisely at the Event Horizon light is trapped as a thin layer forever circling around the Black Hole. Because of this exact equivalence of light and gravitational energy at the Event Horizon, a Black Hole's 45 degree light-line can be directly equated with the Event Horizon. The resulting light-cone can then be called an Event Cone. This is depicted in a space-time graph Figure known as a Combined Penrose-Kruskal-Szekere Figure.

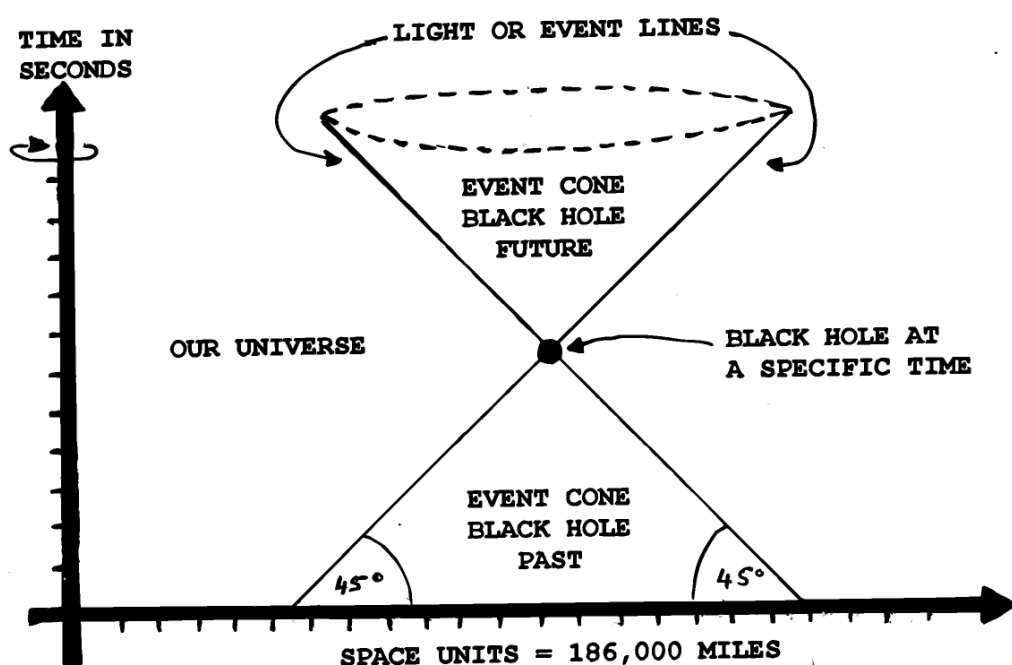


Figure 51: An Einsteinian model of a Black Hole and its Event Horizon

Black Holes pose a great mystery to scientists, for within their "super-space" the causal laws of normality break down, time and space are reversed and matter and energy are created out of nothing or, conversely turned back into nothing. For example, at the very edge of a Black Hole subatomic particles may suddenly pop into existence. This occurs because the intense gravity around the Singularity is actually able to tear virtual matter into its constituent particles and anti-particles. If one half of the pair just happens to slightly cross the Event Horizon it will

be sucked into the Black Hole, leaving the outside half as a real particle or anti-particle. In this way being is literally ripped out of non-being. Inside the Singularity itself, on the other hand, things go the other way. In this case being is obliterated into non-being as subatomic matter falling into the Singularity is squeezed into formless unity.

In the upside-down world of the Black Hole even space and time switch their usual roles. In our own world we can move freely about in space whereas time marches relentlessly on. Within the Event Horizon it is rather the motion towards the ever-shrinking Singularity, which is relentless, with the time it takes being the free variable. If we were ever able to take a spacecraft into a Black Hole and survive the huge gravitational tides there, any attempt to delay its inevitable fall towards the Singularity would therefore only slow down the ship's clocks relative to the other objects within the Horizon. To the outside universe, however, all this inward falling and variable time-scales would seem to happen in a twinkling of an eye. Indeed, relative to the outside universe, everything in a Black Hole occurs faster than the speed of light.

A Black Hole is impossibly "space-like", to borrow the expression used earlier in connection with Einstein's space-time model. The Event Horizon therefore is a barrier that prevents the non-causal space-like effects of a naked Singularity from rupturing our normal space and time. Of course, "time-like" organisms like us could not stand the intense gravitational field of a Singularity, even well outside a Black Hole, let alone the "space-like" conditions inside. Nevertheless, scientists do know that stellar and inter-stellar material is continually being drawn into the astronomical vortexes where they are almost instantly compressed into nothingness.

Some scientists believe, however, that this material is not squeezed completely out of existence. It is rather shot through the warped space of a Black Hole into another universe, or a different space-time to our own, where it appears as another astronomical phenomenon called a White Hole. These are back-to-front Black Holes that spew out rather than suck in matter and energy. Indeed, some scientists have suggested that our

universe was created from a type of White Hole, albeit the gigantic one of the Primeval Fireball when everything that happens in a Black Hole occurred in reverse. This leads us from the topic of Black Holes to that of the Big Bang.

In this scenario, instead of things collapsing into the unity of a Singularity, our universe started off as a Singularity or Primal Atom which fire-balled into existence during the Big Bang about twelve to fifteen thousand million years ago. A tiny moment after the initial Big Bang, the universe was about the size of a grain of sand and all its future forces, dimensions and mass were fused together as one super-force. This ultra-dense proto-universe then rapidly inflated and broke up into quanta of energy with the initial multiple<sup>279</sup> dimensions dwindling down to the normal three of space and one of time.<sup>280</sup>

One millionth, millionth of a second after the Big Bang, quarks appeared out of this virtual quantum flux, creating ripples and vortexes of gravity as they did so. The inwards pull of gravity in turn acted as a break on the expanding universe.

These two opposing forces of inflationary push and gravitational pull shook things up and set the cosmos vibrating and ringing. As a result, about three minutes after the initial explosion the first matter/anti-matter pairs of atomic particles crystallised out. However, a few minutes later, when the temperature had dropped low enough, most of the matter and anti-matter annihilated itself, with just a wisp being left over, as a result of random fluctuations in this cataclysmic event. This is fortunate for us since it was from this wisp that our entire and still expanding universe is made!

At the astronomical level humanity therefore seems to be bounded by two unbridgeable chasms. The first is the Event Horizon, which encapsulates the many Black Holes that puncture

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<sup>279</sup> Eleven dimensions according to "Super String" and "M" Theory. The seven extra dimensions do not disappear but rather became incredibly small and only operate at subatomic level. This is the area in which Super Strings and Membranes operate – which will be discussed later.

<sup>280</sup> Another theory that will be discussed later is that the Big Bang was a product of two universes colliding at higher dimensions than the usual four of space and time. However, whether in the case of the inflating singularity or colliding universes models there is a similar initial fire-ball and explosive beginning.

the universe. The second is the enormous Event Horizon, which surrounds us as the limit of the observable universe and that, as Edwin Hubbard discovered, extends for a distance of ten thousand million light years.<sup>281</sup> The light from astronomical objects further than that are receding so fast from us that they never reach earth. If we could ever break through this limit of telescopic observation determined by Hubbard's Constant, the very beginning of time would be revealed to us.

On the other side of both these cosmic discontinuities or Event Horizons lays a chaotic plenitude or continuum. A Black Hole's Singularity contains a plethora of compressed possibilities and perhaps even a gateway to other realities. Whereas, at the heart of the Primeval Fireball that lies beyond Hubbard's observable limit is the formless ground from which our universe was created.

The discussion on these two cosmic discontinuities takes us back to the idea that has continually cropped up in this book in areas as far removed as African (and ancient) worldviews, contemporary thought and quantum physics. This is the notion that organised systems need to be separated by gaps or perforated with holes. In the case of African beliefs it is rhythmic offbeats, rituals breaks and mythic voids, for philosophers it is the preconscious levels of the mind and for atomic physicists it is quantum gaps.

In addition, the two cosmic discontinuities of Black Holes and Hubbard's Limit seal up bubbles of super-space in which anything can happen or seal off from view the Big Bang from which everything began. This feature of plenitudes of endless innovation and invention existing hidden behind or beyond our overt and obvious world has also been discussed before. In Africa it cropped up as the "swing" within rhythmic gaps and metaphysical ground that generates mythical figures. In Western philosophy and psychology it appears as the fertility of existential emptiness and the subconscious: and in physics as the phantom world of virtual possibilities within the quantum gap.

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<sup>281</sup> This means light from there takes ten thousand million years to reach us.



We will now turn to some of these similarities in more detail in the following conclusion

### *Conclusion*

Traditional African symbolic systems are full of hidden space. The structure of African rhythm is composed of sonic pulses punctuated with quiet offbeat intervals and syncopations that space-out percussive patterns. Without this “ventilation” as the Ghanaian drummer Kofi Ghanaba calls it, there would only be a featureless blur of noise. Muted upbeats are therefore given the same weight as the acoustic downbeat by African drummers, who use this rhythmic spacing to order and shape sounds into recognisable patterns. Likewise liminal intervals punctuate and define the stages of ceremonial order, whilst behind religious codes and spiritual hierarchies lays the Void, or background creator.

In all these syncopated African arrangements there is silence within sound, license within law, formlessness within form and non-being within the supreme being.

Hidden space, however, not only defines and shapes overt rhythms for African drummers and dancers but also provide for internal swing; as within these offbeat gaps time is not treated divisively, but as a continuous space or field for auditory and kinetic manoeuvres. Africans traditionally use this “swing” within fixed frameworks in other ways. One is in the periodic ritual loopholes of licentious behaviour that interrupts ceremonial law and order. Another is the metaphysical belief that it is a divine ground, a formless energy, or laid-back creator that allows an animated world.

On this question of syncopated and swinging space it is worth reiterating again one of the African paradigms for handling structural space. This is the carver who uses emptiness to both contour the carving and also to explore its alternative shapes. Indeed, the original block of wood or lump of stone can be treated as a material ground that contains infinity of potential figures. The chipping down of solid wood or stone into a pleasing shape is therefore paradoxically a result of a master carver’s acute awareness of empty space. However, the

particular one that emerges is determined by how much and which space the carver chisels out. African carvers therefore literally swing between their material and emptiness: just like African musicians do between their sounds and silences.

In this concluding summary on the discovery of hidden space by modern science I will separate the topic as in the first section of the book. Firstly hidden space as structure-shaping “syncopated” space. Secondly its ability to provide subtle “swinging” space.

### *Syncopated Structural Space*

For many years now psychologists and philosophers have recognised a shadowy and shapeless mental space at the back of cognition. Freud’s name for this is the Libido, a nascent raw energy source for the Ego and other fixed complexes. For Jung this formlessness space appears as the ambiguous unconscious symbols which link up archetypal networks. Phenomenologists know this mental space it as the existential emptiness of the pre-logical and pre-reflexive conscious.

Useful mathematical systems also have to be full of space. Their precise figures are perforated by holes and broken up by brackets that were invented precisely to make calculation more accurate and manageable. This began with the Indian/Arabic concept of mathematical emptiness or zero; followed by the limits of calculus and Cantor’s sets which both attempt to seal-off large and small infinities in a logico-mathematical bid to handle irrational and recursive numbers.

Therefore, just as rhythmic breaks and intervals shape and fill out sound, so too do arithmetical<sup>282</sup> gaps and limiting brackets ironically provide body to mathematics and symbolic logic. Indeed, without these arithmetical spaces mathematics would be nothing but the smooth featureless “continuum” of Cantor.

Ambiguous spaces and discontinuities also cleave and carve-up the physical cosmos. At the macro level there is the disjunction between stellar matter and deep space that

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<sup>282</sup> Incidentally, the very words rhythm and arithmetic come from the same ancient Greek word for “flowing”.

establishes entropic energy flows, a topic that will be returned to in a later chapter. Another break in the astronomical tapestry is the Event Horizon, beyond which we cannot peer. The biggest one of these is the ten million light years limit of telescopic observation, a time-tunnel into the past beyond which lies the universal ground or Primeval Atom. Smaller Event Horizons are those that seal off our normal space and time from the non-causal world Black Holes, which suck matter and energy into nothingness.

The physical structuring of subatomic matter is likewise separated out broken up. Supposedly solid atoms contain mainly empty space, subatomic particles make quantum jumps across nothingness whilst quantum gaps break up the fundamental packets of physical energy. It is these jumps and gaps that give rise to the grainy nature of atomic matter and indeed their chemical properties.<sup>283</sup>

### *Swinging Space*

Modern researchers into the inner workings of the mind have come to realise that the hazy subconscious psychological space or ground helps open up fixed mental pathways to the imagination, to novelty, fantasy and to dreams. For Freud it is the raw polymorphous nature of the Libido that enables it to energise complexes, whilst for Jung it is the very ambiguity of the unconscious that vitalises consciousness.

Phenomenological space and ground are found as the pre-logical "transcendental ego", which categorises the objective world in an ongoing creative process which Existentialists call "praxis". Husserl's "reduction" to a pre-reflexive state of mind is simply a philosophical way of getting back to these inspirational cracks within everyday matter-of-fact consciousness.

As discussed in Chapter Two, this free and unstructured preconscious state is actually ritualised in ancient and traditional African taboo-shattering ceremonies that signal socio-ritual transition. These periods of upside-down behaviour and "anti-

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<sup>283</sup> This is due to fact that orbiting electrons are organised into discrete atomic shells around the atomic nucleus, the outermost of which are most crucial for chemical reactivity and combining power.

structure" return things temporarily to the mythical chaos and primal time necessary for individual and communal renewal. Western philosophers would call this process of ritualised disorder and renewal phenomenological "reduction" followed by re-categorisation and re-figuration.

In the physical realm hidden spaces and breaks fill out, pattern and delimit the manifest universe – but also provide a touch of flexibility and play to matter. At the atomic level this is reflected in the infinite extemporisations of the shadowy virtual world that exists within quantum gaps. At the astronomical level there is the world of "super-space" inside a Black Hole where time is flexible and normal causality breaks down. Moreover, beyond and behind the even bigger barrier of Hubbard's Limit lies creation itself.

As was mentioned in connection with mathematical space, Cantor's neat and tidy Set Theory was an attempt to re-bracket arithmetic sequences in order to isolate ambiguous infinities. But Set Theory has itself, in turn, sprouted nested infinitesimals which are bits of the Mathematical Continuum<sup>284</sup> that occur in between numbers. It is because this infinite continuum "C" can be broken and bracketed in so many ways that mathematics has the flexibility and "swing" to generate a multitude of different made-to-specification theorems.

Gödel's Incompleteness Theorem says the same thing in a different way: that there cannot be any single universal mathematical system (as the Logical Positivists thought) but rather an infinitely of incomplete open-ended ones. We noted this incompleteness musically in the Pythagorean ascending-fifths anomaly. In cybernetic jargon this incompleteness is recognised by the fact that there is no universal truth-machine computer, but instead the range of software that can be programmed into a computer's hardware, depending on the user's choice.

As can be appreciated from the above discussion, many new scientific models of cognition, physics, mathematics and even

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<sup>284</sup> As discussed previously, these infinitesimals are a result of the difference between any discontinuous mathematical system and the seamless ground of the Mathematical Continuum, C.

musical systems and computerised “sound-scapes” are filled out with ambiguous intervals, separating gaps and areas of incompleteness. Like the artists, priests and elders of Africa, these modern researchers have also discovered, or rather re-discovered, the flexibility, fertility and pattern forming properties of hidden space. Without these syncopated spaces and swinging intervals things would all implode into an indistinct blur of sound, a bland continuum, a dull and shrivelled mind, dead atoms in a featureless universe.

## THEMATIC CHAPTER FOUR: HOLISM

In Section One of the book it was noted that the oppositional tensions and multiple cross-rhythms of African music are holistically wrapped up in the Beat in which time seems to be suspended. Likewise, the divine polarities and cosmological elements of African metaphysics are merged in the eternal now of a universal spirit.

As will be examined here in some detail holism has re-appeared in the sciences. Psychologists have revealed that far from the human psyche being made up of mental atoms it is rather a configuration of numerous levels of consciousness, multiple archetypes and the interplay of left and right brain-modes. Many new models of physical matter also involve the unity of opposites, which will be explored using evidence from relativity theories, laser technology and quantum physics.

Sometimes a timeless factor is added to these pictures of totality and an early example is the vitalism of the late nineteenth century French scientist Henry Bergson<sup>285</sup>. Others that will be discussed here includes Jung's synchronicity, gestalt immediacy and new physical models that involve geometrical time, encoded holographic time and instantaneous atomic time.

We will first turn to holistic theories of the mind.

### *Gestalt Psychology*

Early psychologists, as discussed earlier in the previous Thematic Chapter on hidden space, approached the problem of human consciousness from two quite different perspectives. The Behaviourist School of Watson, Pavlov and Skinner considered that thought could be boiled down to passive perceptual "atoms" and reflexes conditioned and bundled together by external punishment and reward. The German Gestalt School of Wertheimer, Kohler and Koffka<sup>286</sup>, on the other hand,

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<sup>285</sup> Bergson's idea was a scientific version of the old animistic belief that the universe was dynamised by a universal force. He called it the "elan vital".

<sup>286</sup> For Kohler see 1976 and Koffka (1953).

maintained that the mind itself actively assembled whole patterns or configurations out of a mass of jumbled impressions. This, they argued, is why the sky is perceived as a continuous expanse of blue and not as thousands of blue dots, or why we hear a musical chord rather than a multitude of tiny sonic vibrations. The Gestalt School's emphasis on total patterns also explains the phenomena of immediate recognition,<sup>287</sup> instant insight and flashes of illumination.

For gestalt theorists the psyche is like a magnet whose field arranges sensory and behavioural atoms into patterns akin to those of particles of iron filings around a magnet. Furthermore and as noted with the gestalt face/vase Figure depicted in Chapter One, every pattern has its negative. So one can choose which of two complementary patterns becomes the figure with a boundary, whilst its counterpart is pushed into the background.

Of course psychological processes are much more complex than this, as the mind can simultaneously spin numberless figure/ground gestalts, retaining some of them as long term memories, complexes, and fixations. Those that are kept and objectified become the categories, representations, worldviews and figurations of phenomenology and sociology mentioned earlier.

Besides behavioural atoms and gestalt configurations, another contrast between behaviourist and gestalt psychology lay in their experimental approach. The Behaviourists, with their salivating dogs, laboratory rats and Skinner Boxes, developed a "ratomorphic" view, to quote Arthur Koestler. This saw learning as a gradual process of acquiring individual habits by trial-and-error, which were then reinforced or suppressed (i.e. programmed or conditioned) by food pellets or electric shocks supplied by a technician to the caged animal.

Gestalt research on animals, however, tended to be conducted in more natural surroundings. For example, the

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<sup>287</sup> Practically anyone can recognise a person they have met, even if just once. But it is quite a different matter to describe or draw that face, which involves breaking down the face's components (size, shape, position of eyes, mouth, etc.) and then recombining them.

German writer Kohler observed that free-ranging apes did not always learn by trial-and-error but also through instant gestalt insight. Moreover, an ape's behaviour was not always related to reward and punishment but was occasionally a matter of simple curiosity. This exploratory or playful "ludic" motivation was something, which the Behaviourists could simply not account for.

The principle differences between behaviourist and gestalt psychology are summarised in the following table.

Behaviourist Mode	Gestalt Mode
Perceptual Atoms.....	Perceptual Wholes
Linear Chains of Reflexes.....	Patterned Responses
Gradual Conditioning.....	Insight and Intuition
Tension Reduction.....	Exploratory Drive, Play, Curiosity
Deterministic.....	Free Will

### *The Balance of the Left and Right Brain*

The above differences between the two opposing psychological schools may not in fact be as mutually exclusive as they would have us believe, as the behaviourist and gestalt approaches may simply reflect the two major modes of human thinking. This, as was discussed in the Thematic Chapter on polarised tension, is the bilateral asymmetry in the functioning of the two brain hemispheres. In short, even though the forebrain is lateralised the brain operates holistically, as the two polarised modes of thinking are in fact reciprocal rather than mutually exclusive.

In the Thematic Chapter on polarity the visual-spatial mode of the non-dominant mute side of the brain was contrasted to the speech and sequential thinking of the dominant side. Subsequent research has added other differences between the mental processes, which occur in the two halves of the brain, and these are listed in the table below.<sup>288</sup> To this list it I have also

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<sup>288</sup> The table is for a right-handed person (it would be the opposite for a left-handed).



added the gestalt and behaviourist modes: as well as those specifically related to music

***Table: The complimentary partnership between the left and right brain modes of thinking***

Left Dominant Hemisphere	Right Mute Hemisphere
Temporal.....	Spatial
Sequential.....	Simultaneous
Lineal.....	Patterned
Analytic.....	Relational
Deductive.....	Metaphoric/Inductive
Discrete/Focal.....	Continuous/Diffuse
Differentiated.....	Integrated
Rational/Inference.....	Intuitive
Directed.....	Free/Spontaneous
Intellectual/Abstract.....	Sensual/Concrete
Digital.....	Analogue
Verbal Information and the internal monologue <sup>289</sup> .....	Non-Verbal and Visual
Behaviourist.....	Gestalt
Musical analysis.....	Musical appreciation
Reading melodic lines.....	Reading vertical chords
Deciphering tonal sequences...	Deciphering complex tones
Sudden pitch changes.....	Steady-state vowels sounds
Naming pitches/rhythms.....	Recognising pitches/rhythms

The complimentary nature of these left and right brain modes of thinking is quite apparent from the above list, both of which should be utilised in a well-rounded personality. Let me take an example from the musical arena. What is the point of being able to analyse music and read score-sheets if one cannot imaginatively compose or improvise? On the other hand what is the point of being so musically spontaneous that one cannot

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<sup>289</sup> In other words internally talking to oneself.

string a melodic sequence together or keep time with one's fellow musicians?

In connection with these two complimentary ways of thinking, the child psychologist Piaget observed that very young children<sup>290</sup> learn melodies as smooth contours by a process he called "topological mapping". It is only around five years old, when they become fascinated with quantification or "digital mapping" that melody is conceived as a sequence of separate notes. Indeed the medieval evolution of Western music notation followed this holistic mute right to dominant left brain mode development: from early accents or "neumes" that roughly depicted the melodic contour above the Latin Plainchant words, to a series of written notes read left to right along scalar staff-lines.<sup>291</sup>

Except for songbirds humans are the only animals that show distinct brain lateralisation. Nils Wallin, the writer of the book *Biomusicology* (1991) suggests that this had an evolutionary function associated with the emergence of speech, when prepositional and analytical consciousness became necessary. Although this new mode became located in the left dominant hemisphere (for right-handers), the older gestalt/analogue mode continued in the right side, where it is more closely linked to the instinctive limbic system and thus can draw on emotional and motor auras for mnemonic purposes.<sup>292</sup> The old and newer modes of consciousness are however constantly exchanging information on their differing outlooks of reality in a beneficial way. Indeed, Wallin believes that this left/right brain synergy has had a positive function for human evolution which he calls "co-action" and which the Austrian biologist Erich Jantsch calls a "mind eco-system".<sup>293</sup>

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<sup>290</sup> At what he called the "preoperative stage".

<sup>291</sup> This change to staff-notation took place in the eleventh century and is associated with the Italian monk Guido D'Arezzo.

<sup>292</sup> This link between music and memory is tapped when someone turns difficult-to-remember names, numbers, dates, etc. into a song or rhyme. Incidentally, the ancient Greeks believed the nine goddesses or Muses of the arts were the daughters of their high-god Zeus and the goddess of memory, Mnemosyne.

<sup>293</sup> Jantsch is also an astrophysicist. See his 1976 book *Evolution and Consciousness*.

Julian Jaynes (1975) has a similar evolutionary idea on the switch from right to left-brain thinking in his notion of the Bicameral Mind. He suggests that prehistoric cultures were "mute" right brain oriented, had no internal monologue and therefore little capacity for introspection: consequently stress was projected outwards in hallucinatory visions and voices. Jaynes believes that the introspective dominant left brain with its internal monologue and heightened sense of "I" is associated with modern literate humanity, but it results in stress being turned inwards as schizophrenia and guilt. Moreover, Jaynes considers that it is the more archaic right brain mode and what he calls its "diminished sense of I" that explains states of hypnotism, religious frenzy and trance, even in the modern context. I should add here that these states are not necessarily negative, for as noted in Chapter Two of the book, they may be therapeutic, cathartic and uplifting, as when one is entranced by a piece of music or finds emotional release in a dance-groove.

The discussion in Chapter Two on non-chronological African "accumulated" and "spatial" time is also relevant to Jaynes' Bicameral theory, as these pre-industrial ways of treating time as an eternal now would fall under the non-dominant "mute" right brain gestalt mode. However and as previously pointed out, this does not mean Africans do not use the sequential time mode. For instance, whereas in African polyrhythmic music the Beat can be considered to be a chunk of accumulated, spatial or gestalt time, there are also the long linear passages of the singers and master-drummers.

There are other non-Western examples of the use of both what would now be called left and right-brain modes, but masked in religious terms. These are the intuitive Dionysian and intellectual Apollonian approaches of the ancient Greeks, the formal Confucianism and spontaneous Taoism of old China and the "hot" possessional and "cool" divination cults of Africa.

In spite of these old insights and holistic psychologies Western rational industrial thinking has unfortunately become largely located in the left dominant brain, so that the standard IQ (Intelligence Quotient) test today is largely a measure of left-side thinking, concerned as it is with analysis, reduction and

sequential logic. The IQ test is therefore skewed as it only measures one half of the intelligent brain.

### ***Jungian Archetypes and the Collective Unconscious***

The psychologist Jung brought holism into the picture in two ways. One is his concept of a person's mental archetypes and the second is that there is a collective unconscious of humanity as a whole, but which is located in the individual mind

Although Jung's archetypes came in pairs he treated their oppositions as complements that should be evenly matched in a healthy and centred personality. In other words he considered that their dualism could be transcended by a psychological unity or gestalt he called the Self. This, like the African polyrhythmic Beat and African multiple soul<sup>294</sup> is a polyvalent sum greater than its musical or archetypal parts. Some religious references to this mental totality includes the ancient Greek notion of "psyche", Buddhist "mindfulness", the Hindu state of oneness or "samadhi", the "self-remembering" of the Russian Sufi Gurdjieff and the contemplative prayer of the medieval German mystic Meister Eckhart.

Jung's holism also included a universal mind, a psychological equivalent to an instinct which he called the "collective unconscious". This is expressed in the similarity of myths and spiritual motifs of mankind through the ages and in the dreams and fantasies of individuals. The mandala is just one such example of this universal motif. Furthermore, below the collective unconscious of an individual was an even deeper "chthonic" level where the organic meets the inorganic and the psyche merges with the universal ground. Jung considered that most ancient religions metaphorically knew these bottom levels of the mind as the Abyss or Chaotic Waters of the Deep.

According to Jung it is from these collective and chthonic subconscious levels of an individual that appear feelings of oneness, the hunches, coincidences, premonitions and other phenomenon that seem to transcend space and time. He called these non-causal links "synchronistic"; really a modern

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<sup>294</sup> For instance the "Se" composite-soul of the Fon of Dahomey.

psychological name for the illuminations and visions that priest and prophets have obtained since time immemorial through meditation, dance or an ecstatic awareness of the “eternal now”.

We now turn in more detail to Jung’s notion of mirror-image archetypes, which in gestalt terms are like the complementary figures that arise from the ground. We have already come across three of these twin archetypes already: the Animus/Anima, Persona/Shadow and Introvert/Extrovert. Two other are the conscious ego and the unconscious mind, and the sensual feeling personality and its contrary abstract thinking type.<sup>295</sup>

Two archetypal pairs will be discussed here in some details, as they are relevant to the musical and mythical polarities discussed in Section One of the book. They are the masculine Animus and feminine Anima and the overt personality or Persona and its hidden Shadow.

According to Jung everyone contains psychological aspects of the opposite sex, just as they possess physiological vestiges (such as breasts in men). The Anima of a man is a product of the repressed feminine, responsive, intuitive and emotional sides of his nature. Conversely women have a hidden assertive, rational and male character, or Animus.

However, Jung regarded these two sexual archetypes as not only being found in individuals, but also in the collective unconsciousness of humanity as a whole. They therefore appear in many mythical guises<sup>296</sup> as the Chinese principle of Yin and Yang, the Hindu deity Shakti and Shiva, and Europe’s poetic figures of mother nature (Gaia) and father time (Chronos). Here we might also add the masculine ancestral deity and feminine spatial ones of the Ila people of East Africa and the Hot Mama and Daddy Cool of African American musicians.

Another mythical metaphor of this union of sexual opposites that Jung notes is the sacred marriage of the mystery religions of antiquity, such as those of the Egyptian cult of Isis and Osiris and

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<sup>295</sup> The latter, incidentally, falls within the left/right brain dichotomy shown in the previous table.

<sup>296</sup> See Jung (1956 and 1964).

the Greek one of Dionysus and Demeter. An old Christian equivalent is the catholic nun who becomes a holy bride of Christ. Some traditional African examples that can be added here are Mawu and Lisa of the Ewe people, Oduduwa and her husband, Orinshanla of the Yoruba, and Lesa and his female messenger, Bulongo, of the Ila of East Africa.

According to Jung, sacred marriage is the mythical dramatisation of how an individual should harmoniously deal with the aspects of the opposite gender they contain. Usually at the personal level this is achieved through projecting this ideal on to their marriage partner or loved one, or it is kept internalised as a guardian spirit and source of inspiration. Which is why artistic men often regard their intuitive and emotionally sensitive side as a feminine spirit or muse. In fact, many societies depict unconscious hunches, inspirations and intuitive wisdom as feminine: like the nine ancient Greek muses of the arts. An African example is the female aspect of the supreme deity Lesa whom the Ila people believe rules over the unconscious life soul side of their nature.<sup>297</sup>

Occasionally, the Animus or Anima of a person are not internally married, integrated or projected in the normal way. In this case a man may so fear and suppress his female side that he becomes super-rational or a "macho-man" who hates anything sentimental. On the other hand, a woman who rejects her more assertive and masculine nature may end up nothing more than a toy of men, or pine away in a submissive decline like a genteel Victorian lady or modern anorexic women.

Another Jungian set of complementary archetypes, but this time of the same sex, is the Persona and Shadow. The Persona is the public mask one presents in everyday life. The Shadow on the other hand is made up of the opposite characteristics that are left behind in the unconscious ground. Thus a ruthless businessman may have a sentimental core, and a public

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<sup>297</sup> Other examples are Sophia (Wisdom) of early Gnostic Christians, Lady Luck of gambling men, Dante's Beatrice, Spencer's Fairy Queen, the medieval Knight and his fair damsel and the Chinese patron of arts Kwan Yin, or Lady-of-the-Moon. Conversely the ordered rational law-making approach is the domain of masculine sun and sky gods such as the Graeco-Roman Apollo, the Judaeo-Christian Jahweh and the conscious male aspect of the Lesa deity of the Ila of Zambia.

philanthropist a manipulative streak. Like the Animus/Anima, the Persona and its Shadow has a collective as well as individual dimension. This is expressed mythically as Heavenly Twins of the same gender but of opposing natures: Christ and Lucifer, Apollo and Dionysus, the Indian goddesses devouring Kali and benign Parvati, the Egyptian fratricidal Set and his brother Osiris. An African example is the lopsided Yuruga or Pale Fox, the twin Nommo or spiritual guardian of the Dogon of Mali who rebelliously tears off his twin.

In the case of some individuals the Persona may become so dominant that the Shadow aspect of the dual archetype may be completely repressed and ignored. Thus over-rational intellectuals will deny their sensual intuitive side, the overtly kind and obsequious will abhor their aggressive traits and the ultra-refined will disclaim their bodily functions. When their Shadow finally manages to surface from the subconscious, as it sometimes does, it may be externally projected onto others, who then become the irrational, violent, primitive, evil or bestial scapegoats for an individual's own repressed side. Alternatively, the Shadow may internally exhibit itself in mild forms, as slips-of-tongue and episodes of out-of-character behaviour, or more seriously as schizophrenic possession by multiple personalities, alter egos and other "demons". These are precisely the states that are therapeutically dealt with in Africa via ritual dramatic catharsis, or turned into the positive asset of the oracular powers of possessed devotees and dancing prophets.

Jungian psychologists also believe that the projection of shadow images can occur at the collective level as well at the individual. For example, in early Gnostic Christianity, God was believed to have produced two sons of equal cosmic importance – the heavenly Christ and the earth-bound anti-Christ, Lucifer the light-bringer. In the later (post third century AD) Catholic version of Christianity the fallen angel Lucifer was demoted to pure evil, destruction, the under-world and carnal desire.<sup>298</sup>

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<sup>298</sup> Relevant to this topic of fallen angels is the figure of Satan who appears in the Old Testament as one of the angel who asks God for permission to tempt Job. Therefore God and his angels are the source of both good and evil in the world.

These baser aspects of Christendom however did not then just simply disappear because they had been swept under the biblical carpet, so to speak. Instead, they were projected by the church onto its enemies who were the murderous heathens, lustful pagans, malevolent heretics and the female witches that the Catholic Inquisition and later Protestants felt justified in torturing and burning.<sup>299</sup>

A parallel but more recent case was the cold war division of the world into hostile Eastern and Western Block nations, each the embodiment of the others collective Shadow. Thus, whilst the communist countries suppressed individualism and saw this bourgeois sickness in its capitalist adversary, the West encouraged privatisation and treated collectivism as the great red menace of the day. Over these two Shadows the world could have been destroyed. Indeed they have left us such a legacy of atomic, chemical and biological weapons and the expertise for manufacturing and using them that this could yet occur. However, this time around the shadow fight is between Islamic fundamentalism and Anglo-American Protestantism: the so-called Axis of Evil versus the Great Satan.

Jung is famous for his theory concerning archetypal complementarity and the balanced Self, a holistic notion also propagated by other important psychologists, such as Piaget's "decentred self" and Erik Erikson "integrated ego" which will be discussed under the Thematic Chapter Seven on mature poise. However it should be mentioned here that Freud, in his later writings<sup>300</sup>, also developed a complementary theory of personality. This occurred when he moved away from his previously mentioned contention of there being a single psychological drive that forms part of a tension/release mechanism<sup>301</sup>, to one that involved two opposing drives: Eros

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In later Christianity these two opposing principles are split apart, with God being purely good whilst Satan and his legion (the other fallen angels) being all-evil.

<sup>299</sup> See Murray's classic work (1921) on this latter topic.

<sup>300</sup> See his book *Civilisation and its Discontents* (1962).

<sup>301</sup> In his early career Freud believed that there was only the single Libido, which he conceived as an energy pump that exists in the subconscious Id. The conscious Ego is consequently trapped between this primal energy welling up from the Id



and Thanatos, the life and death instincts. Freud had come to realise that his earlier notion of a single psychological drive or pump led to a self-defeating psychological arrangement, for if a person's unconscious desires or Libido was ever totally satisfied by the lifting of all restraints, then the Libido's pressure would drop to zero and the psyche would grind to a halt. This led Freud to the pessimistic inference that as civilisation has to keep the natural desires and instincts neurotically bottled up under pressure there can never be any hope of a fully free future society<sup>302</sup>: an odd conclusion for a psychiatrist trying to cure repressed patients.

It was to resolve the paradox that Freud developed his theory of a double drive that would continually keep mental energy circulating. Eros, which represents the Libido and self-preservation, forms one half of the cycle, whilst Thanatos, or the death and decay instinct, forms the other. What Freud actually ended up with was a cyclical system that not only resembles that of Jung but also the notions of growth and dissolution found in old fertility religions.

The neo-Freudian Norman O. Brown (1968) pushed this idea of Eros and Thanatos even further, by suggesting that it is the fear of the death instinct that has governed modern industrial society over the last three hundred years or so. In the battle against decay, dirt, and insecurity the Protestant-capitalist ethic put all its faith in routinisation, super-cleanliness, novelty, shiny machinery and life sterilising weaponry. The disorder and degeneration of Thanatos was consequently repressed into the collective unconscious and has become its Shadow. This, believes Brown, has re-emerged as the compulsive self-control and self-denial of the capitalist spirit, which emphasises regimented behaviour, deferred gratification and miserliness.

Freud called this behaviour "anal retentive" which he believed stemmed from the over-strict Calvinistic/Puritan drilling of children concerning their natural bodily functions such as

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and the repressive restraints of the Super Ego. The Ego, in response is therefore constantly trying to find ways of reducing this nervous strain.

<sup>302</sup> This pessimistic conclusion is very clear in Freud's 1962 book *Civilisation and its Discontents*.

toilet-training; which then ironically becomes an area of fascination and neurotic fixation. As far as a child is concerned, if so much fuss is made over its excreta then it must be something valuable that should be held-back and saved. This connection between anal fixation (or sphincter morality<sup>303</sup>) and wealth or savings is hinted at in terms "filthy lucre" and "filthy rich". As far as Freud and psychologists influenced by him are concerned, the miser who is holding back everything for a rainy day is really suffering from a neurotic type of constipation.<sup>304</sup>

### ***Atomic Complementarity***

In Thematic Chapter One on polarised tension we looked at the nature of the subatomic world in terms of difference: the particle versus wave debate, the opposing spin and charge of atomic particles matter and anti-matter. Here we will look at them in terms of them being harmoniously matched or balanced, what Paul Dirac called "parity". Incidentally Dirac later extended this atomic balance notion to also include time symmetry, believing that anti-matter was simply matter going backwards instead of forwards in time.

However, it was the Danish scientist Niels Bohr, who was the first to look at this whole question of atomic oppositions from a holistic angle when he coined the word "complementarity" in the 1920's. He did this to help explain the riddle of how atomic matter could be both wave-like and particle-like at the same time. This synthesis took place after the two well known quantum physicists, Werner Heisenberg and Erwin Schrödinger, had an argument. Heisenberg was pro-particle whereas Schrödinger thought atoms existed as probability waves. As a result Heisenberg<sup>305</sup> refused to use Schrödinger's statistical method of Wave Equations to determine atomic processes, considering it too vague. Instead, Heisenberg devised his

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<sup>303</sup> This is the term used by the neo-Freudian psychologist Carl Rogers.

<sup>304</sup> Norman O. Brown also makes the interesting point that the Protestant work-ethic ultimately stems back to Martin Luther's religious "excremental vision", which he had in a privy after a severe bout of constipation and during which he threw his own faeces at the devil.

<sup>305</sup> See his book *Physics and Beyond* (1971).

Scattering Matrix, which provided a mathematical grid for the potential movement of particles rather than waves. Nevertheless, although working from very different points of view, Wave Mechanics and particle Scattering Matrixes gave exactly the same results. Consequently, Bohr was able to convince all his contemporaries that the fine structure of atoms could be two seemingly contradictory things at once: wave and particle, or just simply "wavicle".<sup>306</sup>

### ***Einstein's Space-Time Continuum and the Interconvertability of Energy and Matter***

Einstein's Relativity Theories that connect energy with matter and space with time are relevant to this holistic theme. The link between energy and matter was made in his Special Theory of Relativity which is expressed in his famous equation concerning the inter-convertibility of energy and matter:  $E = Mc^2$ <sup>307</sup>. In Einstein's view therefore, matter is a locked-up form of energy; quite different from Newton's image of dead inert matter being galvanised by external forces. Ironically and as mentioned earlier in the book, Einstein's modern theory completely bypasses Cartesian spirit/matter dualism and more closely resembles old Eastern and African animistic beliefs of there being a universal divine spirit<sup>308</sup> that energises objects from within.

In addition to Einstein's Special Theory of Relativity that unifies matter and energy, his General Theory of Relativity unites space and time into a single space-time continuum. This four-dimensional continuum was discussed earlier in connection with the theme of relativism and the multiple perspectives of observers. Unlike the rigid space and time scaffold of Newton and Descartes, Einstein's space-time continuum is elastic and so can be twisted and warped.

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<sup>306</sup> See Briggs and Peat (1984) and Gardner (1967).

<sup>307</sup> Energy equals the mass of an object multiplied by the square of the speed of light.

<sup>308</sup> Such as Chinese Ch'i, Hindu Prana, Bantu Ntu and Dogon Nyama.

As will be discussed again later in more detail, physicists attempting to unify space, time and gravity and other fundamentals have in recent years, expanded Einstein's four-dimensional continuum to the eleven dimensions of vibrating Super Strings. But the warping and possible perspectives of either of these multi-dimensional models presents features also found in the African polyrhythmic Beat: namely its multiple angles and orientations and its rhythms that can be dilated, bent and compressed. Moreover, both the higher dimensional continuums of physics and the musical Beat suspend time by converting it into a spatial and geometrical mode.

### *Universal Interconnectedness and Bell's Theorem*

Another aspect of physical holism is inter-connectedness, known in Particle Physics as the "quantum indivisibility" effect. This principle was discovered in the 1920's when double-slit defraction experiments, similar to those of Thomas Young's discussed earlier, were carried out using highly controlled beams of either electrons (electricity) or photons (light) to produce interference patterns.<sup>309</sup> However, even when these subatomic particles were fired one by one, their combined result of the experiment still formed interference bands. The problem therefore arose of how did the individual electron or photon knows where to fall.

At first this indivisibility effect was considered a probability effect, in that whereas a single electron or photon seemed to fall randomly on a node or anti-node, a pattern emerged en masse. This is similar to the fact that when one repeatedly tosses a coin a statistical pattern of the ratio fifty-fifty emerges. This statistical explanation lasted until the 1960's when the whole question of the interconnections between individual quantum events came up again. It was then the Irish physicist J.S. Bell proposed that indivisibility, rather than being a statistical phenomenon, was a result of instantaneous communication between subatomic particles.

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<sup>309</sup> As discussed earlier, interference bands or moiré fringes are created by overlapping waves (or wavicles) that interact to produce "super-waves" with super-crests (nodes) and super-troughs (anti-nodes).

In 1982 Alain Aspect proved Bell's Theorem correct. This French physicist split pairs of photons whose spin was inversely linked, beamed them in opposite directions and twisted one of them whilst in flight with a polarising filter. He discovered that the other photon became immediately oppositely twisted in sympathy, even though it must have received the information from its partner at super-luminary (faster-than-light) speeds. This would have shocked Einstein had he been alive, for it upset one of the fundamental constants of his relativity theory.

In fact it shocked Professor John Wheeler who solved this super-luminary problem by suggesting there must be short cuts in the tapestry of space and time. For him, Einstein's space-time continuum is folded up at the microscopic level. So it has a foam-like geometry that is full of cross connecting short-cut "wormholes" through which quantum data can travel enormous distances in no time at all.

Whatever the correct interpretation, it now appears that news travels instantly in the quantum world, which puts the universe as a totality in immediate touch with itself. In other words "cosmic togetherness". So our everyday feelings of separation may in fact be an illusion – something that many religions have been suggesting for millennia. Some such examples are the Hindu concept of Akintya or "suchness", the Greek harmony of the spheres and the medieval European astrological microcosm within the macrocosm. As noted in Chapter Two, African societies also have a notion of an interconnected universal spirit; such as Nyama, Chukwu, Sunsum and Ntu of the Dogon, Igbo, Akan and Bantu-speaking peoples respectively.<sup>310</sup>

### ***Universal Interconnectedness and the Laser Hologram***

Another holistic model of physical interconnectedness comes from the development in the 1960's of laser technology and hologram pictures, which are stored in a photographic emulsion

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<sup>310</sup> In the Akan case the symbol of spiritual omnipresence is represented in their "Gye Nyame" adinkra stamp pattern, which was depicted in Chapter Two.

as diffuse interference patterns.<sup>311</sup> These patterns are similar to those already discussed in connection with the standing waves of musical harmonies, ocean super-waves and Young's defraction experiments. Indeed, it is precisely Young-type moiré fringes, which are formed inside the photographic emulsion of a hologram. The picture of the original object can be reconstituted by simply passing laser through the photographic emulsion. The image then appears as if solid and exactly at the same distance from the plate as was the original object. Furthermore, unlike a conventional flat photograph, one can actually look right around the sides and the back of the three dimensional holographic image.<sup>312</sup> Indeed, the holographic storage of information as interference patterns is so efficient that not only can it give three-dimensional images, but if the holographic plate is cut up, each bit can generate the whole image: although the picture becomes more and more fuzzy the smaller the piece. In other words each part of a hologram is a "holism gram" that encodes the whole picture.

It was precisely this property that inspired the American physicist David Bohm (1980) to conceive his ideas of the Implicate and Explicate Orders. He compared the universe to a gigantic hologram created from the interference of all its myriad radiant energy and wavicles. The explicate, or what we manifestly see and feel in everyday life, is therefore equivalent to the image of a hologram. The Implicate Order on the other hand is a cosmic interference pattern that is folded up and hidden inside the physical realm, just like the encoded holographic patterns which lie behind a hologram picture.

However, whereas a photograph depicts a still picture, the universe is dynamic. Bohm therefore called the enormous

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<sup>311</sup> A hologram is made by passing coherent (same vibrational polarity) laser light onto a photographic emulsion. Only half the laser light however is allowed to fall directly onto the plate as the other half, which is split off by a mirror, illuminates the object. When the reflected light meets the direct beam of laser light at the photographic plate they mingle and overlap to form interference patterns.

<sup>312</sup> In a sense a hologram reverses the process of making interference waves. A hologram rather starts with the complex interference pattern (known mathematically as Fourier Transforms) in the emulsion and ends up with the simpler wave patterns of the laser and reflected light, which unscrambles the original image of the object.

interference pattern and its image that we inhabit a "holomovement" rather than a hologram. Nevertheless, like a hologram, every part of the Holomovement universe contains encoded information about the rest, however small the parts. In other words Holomovement is cosmic unity: including its past, present and future. Accordingly, what appears to us as the steady march of time is in fact the gradual holographic unfolding of the concealed Implicate Order into the Explicate one.

On the smaller scale holographic information may be one of the ways the brain stores memories. The Dutch psychologist Herman Sno and the American neurosurgeon Karl Pribram (1971) assert that memory is not localised in certain areas and then transmitted like an organic telegraph exchange, but is rather diffuse and holographic; being stored throughout the whole brain as dynamic interference patterns created from overlapping brain waves<sup>313</sup>.

### *Conclusion*

African Holism is expressed musically as syncopated rhythmic resultants and polyrhythmic Beats, and as the ritual community that unites social moieties, clan segments and ceremonial phases. Another holistic African belief is of a universal spirit that inhabits, vitalises and links up the temporal material world into cosmic togetherness.

Examples of "togetherness" in modern studies of the mind include, psychological gestalts, Jung's polyvalent Self and collective unconscious, matching twin-archetypes and complementary left/right brain modes. Phenomenologist philosophers know this totality as the Transcendental Ego that weaves together the countless "categories" of an individual's worldview. In earlier times and other contexts the ancient Greeks called it "psyche" and "mindfulness" or "self-remembering" (by religious thinkers).

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<sup>313</sup> These brain-waves are called "slow-wave potentials" which are the electrical-chemical waves produced by the hundreds of tiny dendrite side-connections which project from the surfaces of nerve cells.

Whether in the sonic or mental realm, the sum is always greater than the rhythmic, archetypal or neural parts. To try to decompose them into their basic constituents simply destroys their internal dynamic. To exclusively stress a single rhythm kills the African Beat. To concentrate on just one specific mental complex is known as neurotic fixation, to suppress one side of an archetype produces unhealthy shadows, to focus on only the left or on the right brain-mode distorts thinking.

Togetherness has also cropped up in the hard sciences as Einstein's interconvertability of matter and energy, which is so reminiscent of African belief in a universal spirit that internally animates matter. There is also Einstein's relativistic theory that links space, time and gravity into a single continuum of four dimensions, which Super String theorists have expanded to eleven. As noted in the previous Thematic Chapter even the mathematics utilised by physicists has a unified continuum, the one invented by Cantor to include all numbers and all infinities between and beyond number.

Interference patterns, standing waves or harmonics are also holistic entities found in physics whose sums are greater, or at least different, from their vibrating parts. Interference is, in turn, the basis of the laser holograms in which the whole picture is encoded in each part. An idea, incidentally, that is remarkably like the old metaphysical alchemical/astrological conviction that the macrocosm can be found within the microcosm.

David Bohm's has gone on to make the analogy that the whole universe is an implicate holographic code whose unfolding generates our explicate world of time. Or to put it the other way, Bohm's universal hologram is a fabulously modulated vibration.

So again we end back up with old holistic intuitions of a divine and eternal vibrational harmony. Ancient Egypt had its formative cosmic sounds or Neters, the Greek their music of the celestial spheres, the Chinese their Primal Tone and India its Om chant. In Africa we have noted this link between earthly vibrations and divine harmony: rhythms for healing, for spiritual possession and for specific deity: not forgetting the "Nommos ears" drums of the Dogon and the buzzing devices attached to



hand-pianos, drums, xylophones and other African instruments to facilitate contact with the spiritual world.

African musical and metaphysical holism also involves the suspended "spatial time" of the Beat, the "eternal now" of the universal spirit and the gathered "accumulated" time of growth and aging.

Timelessness also comes in the modern scientific picture. It appears in psychology as gestalt instantaneity and seemingly timeless subjective state called the "oceanic feeling" by Freud, "synchronicity" by Jung and "peak experiences" by Abraham Maslow. In philosophy timelessness appears as Husserl's phenomenological "transcendental ego" and Sartre's "existential now".

In the hard sciences there is the quantum indivisibility effect that puts all atomic particles and energy, however scattered, into instantaneous super-luminary touch with each other. Then there is the encoded implicit time of Bohm's holographic universe. Einstein's continuum is another case in point, as it converts passing time into a fixed geometry that not only makes time "timeless" but is similar to the African notion of accumulated time in which every moment or "now" embodies all prior ones.

Some Western mathematicians have also been fascinated with this idea of "timeless" time. Peter Ouspensky, Edwin Abbott, and Charles Hinton all tried in their books to imaginatively draw their readers into a higher dimensional realm where time became just an additional angle of space within which one could move around at will. Kurt Gödel, also speculated on the possibility of time travel as did the engineer J.W. Dunne who believed precognitive dreams proved it.<sup>314</sup>

So modern psychology, philosophy, mathematics and the hard sciences have all ironically taken us back to the timeless time of the Eternal Now, which since ancient times has been experienced by meditating monks, ecstatic diviners, possessed dancers and polyrhythmic drummers.

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<sup>314</sup> For Ouspensky see 1970, for Abbott (1984) and for Dunne (1934).

## THEMATIC CHAPTER FIVE: CIRCULARITY

Africa has its repetitive musical Beats, sacred circles, life cycles and socio-ritual rounds. Beginning and ends were likewise harmoniously rounded-up by the music of the spheres of ancient Greece, the Egyptian Phoenix bird, the Eastern reincarnating wheel of life, the astrological time-cycles of antiquity and in the musical rounds, catches and fugues of medieval Europe.

From all these points of view repetition is not a waste of time but rather an accumulation of time, an increasing of its weight and density. As previously noted, this pre-industrial notion of circular repetition being beyond the constraints of normal time is referred to as the Eternal Return.<sup>315</sup>

Although the linear time and straight Euclidian lines of classical science temporarily invalidated these old holistic intuitions, circularity has come back into fashion in the modern world.

In the hard sciences we find this curved sensibility and one example already been discussed in Thematic Chapter Three on hidden space is the mutual creation and destruction whirl of particles and anti-particles depicted as a Feynman Vacuum Figure. Here we will look at some cosmological models that involve curved space-time and a universe that oscillates between periods of maximum expansion and contraction.

We will then move on to Jung's psychological theory of personality that involves a balanced and well-rounded Self that is symbolised in the dreams of individuals and in the collective myths of societies as circular images of unity and harmony that range from Eastern mandalas to Christian halos, from the alchemist's stone to flying saucers.

Finally we will move onto biology and cybernetics where there are reflex arcs, rheostats, steady-state mechanisms and feedback loops. Indeed, modern scientists have discovered that many physical, chemical, thermo-dynamic and living systems are pulsating vortexes of energy whose inputs and outputs are looped together by circular feedback mechanisms.

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<sup>315</sup> See Eliade Mircea's 1954 book *The Myth of the Eternal Return*.

However, we will begin this examination of modern circularity with Einstein, who not only made matter and energy interconvertable and relativised things in four dimensions, but also went on to curve space and bend time.

### ***Einstein's Curved Continuum***

As noted earlier Einstein's General Theory of Relativity combines space and time into a single continuum that can be bent and warped by material mass. One effect of this is what we call gravity: thus the sun's gravitational attraction on the orbiting earth is really the earth falling into circular space-time created by the enormous mass of the sun.

However, the total mass of the universe can twist this space-time continuum to such a degree that it curves back on itself like a giant cosmic egg.<sup>316</sup> This is why Einstein thought that if one could travel for trillions of miles in what seemed to be a straight line, one would ultimately encircle the universe and end up where one began.

There are therefore no straight-lines according to Einstein's curved geometry. This modern idea therefore resembles more the cyclical cosmologies and astrology of ancient civilisations, medieval Europe and traditional Africa than the grid-like linear one of the Enlightenment. Furthermore, when Einstein turned time into a fourth geometrical dimension it became something timeless. So nothing could ever be lost as the past, present and future are all rolled up within the totality of the curved space-time continuum.

### ***A Reincarnating Universe***

A scientific example of circular cosmic holism is the suggestion that the universe has its own life cycle. We have already noted that it started as a Primeval Fireball that exploded into existence during the Big Bang. There are two theories that provide a cyclical touch to its continuing evolution.

One hypothesis that goes back to the 1960's is that the universe began as an exploding singularity and after reaching a

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<sup>316</sup> Or dough-nut shaped torus.

maxima it will eventually contract back down to a Primeval Atom or Singularity again, due to the initial expansive energy being less than the inward pull of universal gravity. This Big Crunch hypothesis, as it is called, hinges ultimately on the total matter of the universe. It was once thought that this was not enough to prevent the universe from enlarging for ever. Recent discoveries of inter-stellar dark matter <sup>317</sup> have tipped the balance. So astrophysicists now think that the present expansive phase will eventually stop and when this happens everything, including time, will go into reverse. The universe will therefore collapse back itself as a Singularity, from which possibly a new universe will emerge.

Quite a different origin of the universe has recently been suggested by Neil Turok of the University Cambridge and Paul Steinhardt of Princeton. They believe that our universe will never contract but rather it will meet its end by colliding with a partner universe in a higher dimension than the usual four<sup>318</sup>. It is the kinetic energy of this collision that ignites the Primeval Fireball and explosive forces necessary to create new matter and inflate the two new expanding universes. Finally after billions of years these two still expanding universes crash together again in the higher dimensions to provide a new fireball and two new universes.

Whether the Big Bang/Big Crunch origin or the higher dimensional collisions of Turok and Steinhardt, both theories lead on to the notion of the creation of a never ending series of universes. Every time the cosmos goes through one complete cycle it ends up as a Primeval Fireball and then bounces out again as a brand new universe. Each time round, however, the cosmic cards are re-shuffled and the fixed constants of that universe may be quite unlike our own, depending on how and when its matter "crystallises" out. Their light may travel faster or slower than ours, Planck's Constant may be different, the Periodic Table of elements and Absolute Zero may not match

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<sup>317</sup> This includes vast dust-clouds, Black Holes, pockets of time-reversal and the slight weight of the ubiquitous neutrino atomic particle.

<sup>318</sup> These higher dimensions will be dealt with later in connection with "Super-String" and "M" Theory.

ours. All adding up to a relativity far beyond anything Einstein and his contemporaries dreamed of.

The Austrian biologist and astro-physicist Erich Jantsch (1980) adds another reason as to why the cosmic cards are never stacked the same way in each cycle: which he believes stems from the fact that the universe is an enormous negentropic structure that creates order out of chaotic disorder or entropy.

As noted previously in the hidden space Thematic Chapter, our universe is not homogeneous but contains sharp distinctions and discontinuities: pockets of radiating matter (suns, galaxies, super-clusters) separated by deep space. Furthermore, the universe itself is expanding. So it is the resulting flow of energies across space that produces the "far-from-equilibrium" situations necessary for pockets of negentropic cosmic order to emerge: such as eddy currents, turbulences, whirlpools and also Black Holes, insofar as they suck in radiation and act as gravitational gyroscopes.

The total universe itself is therefore gigantic universal vortex feeding internally off itself and forming increasingly complex inorganic, organic and finally conscious structures. Then ultimately it begins to finally crunch or collide: only to explode in yet another cycle and another unique set of ordered turbulent structures. Jantsch compares this oscillating model to an enormous living organism, which creates a new universe every time it breathes in and out. In a sense he is back at the age-old reincarnating Wheel of Life idea in modern scientific guise.

### ***Jungian Mandalas and the Cycle of the Self***

As mentioned earlier, Jung believed that the archetypal polarities of the Animus/Anima, Persona/Shadow, Introvert/Extrovert and Conscious/Unconscious were transcended in a psychological unity he called the Self. Furthermore, he believed that throughout the ages the ideal of personal wholeness was represented by symbols derived from collective myths and legends, such as divine twins and holy marriages.

From his researches, Jung also noticed two other symbols for the harmonious Self. One is the sacred circle or spiral; such as Eastern mandalas, Christian halos, reincarnating souls,

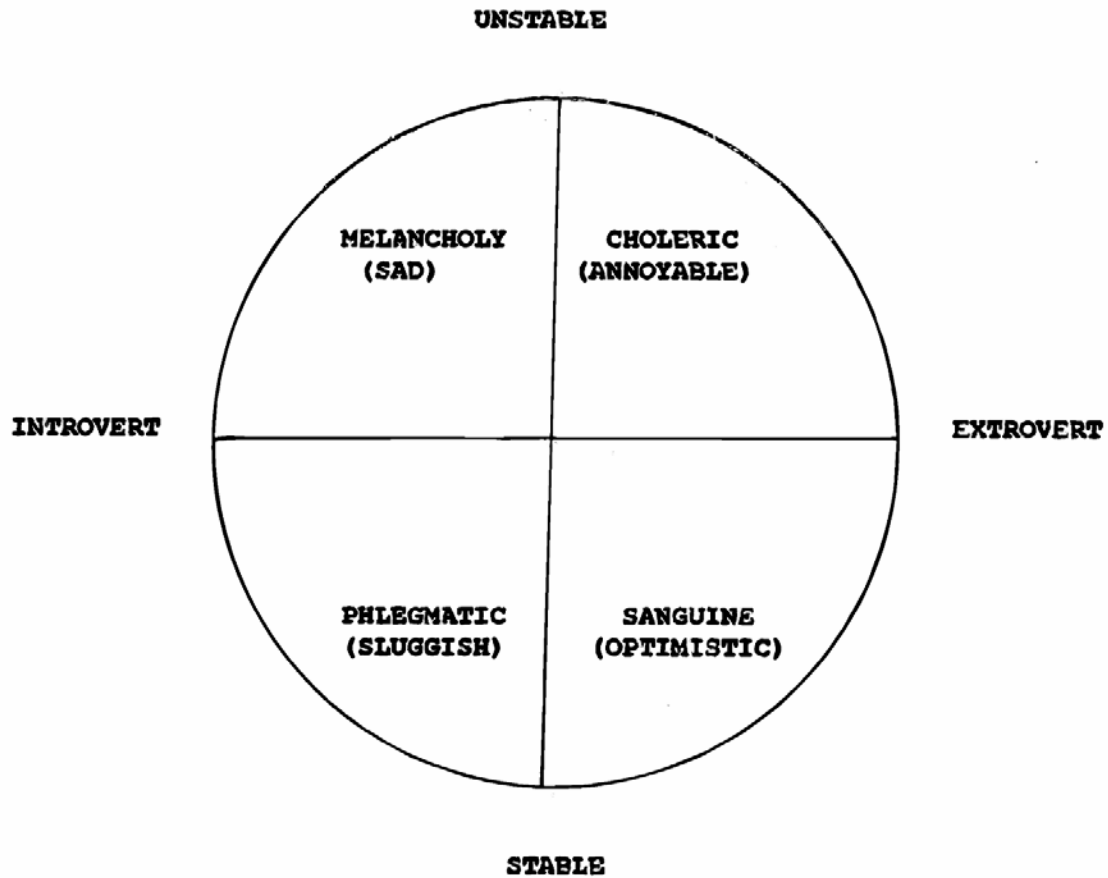
astrological zodiacs and the philosophers "rotundum" stone of alchemy. To this we can add the spiralling worlds, twirling dances, cosmic eggs, rainbow snakes, solar discs, ground-signs and other cosmograms referred to in Chapter Two.

The other important unifying number is four, which is often associated with circularity and which Jung proposed was an archetypal symbol for stability and steadiness vis-à-vis the first three numbers.<sup>319</sup> Indeed, Jung believed that for a healthy, complete and well-rounded Self to develop four equally important types of awareness were needed: namely bodily sensing, holistic intuiting, evaluative feelings and comparative thinking. For Jung personality is, therefore, both rounded off and squared up into the balanced Self.

The psychologist H.J. Eysenck was also interested in fourness, which he used to divide up what he considered the main character types. He did this by crossing Jung's extrovert/introvert polarity with his own stability/instability one. This created four basic types that exactly corresponded to the four humours of the ancient Greeks; namely melancholic (sad), choleric (quick tempered), phlegmatic (thoughtful and sluggish) and sanguine (optimistic). These form a psychological mandala as depicted below.

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<sup>319</sup> According to Jung number one as primal unity is equivalent to the polymorphous unconscious drive of psychology and the universal spirit of religion. Number two is the separation of unity into oppositional mental archetypes and mythical polarities such as divine twins. Three is the resulting strain expressed as psychological tension and the spiritual interplay between, for instance, Set and Osiris or Apollo and Dionysus. All this triangular stress, however, is resolved by number four (and multiples like 8, 12, etc.) which therefore has connotations of stability and completeness.



*Figure 52: Eysenck's four character types – a psychological mandala*

Fourness and its multiples crops up all over the place historically. There are the four seasons and the twelve Babylonian or thirty-six Egyptian signs of the Zodiac. Also as mentioned in an earlier chapter, thinkers of ancient antiquity discovered the twelve semitone intervals of the musical octave generated by cycles of fifths. The ancient Greek philosophers Terpander and Pythagoras considered the musical octave (i.e. eight notes) to consist of two tetraktys (the musical interval of a fourth) which in turn they believed to have mystical properties; a notion of fourness also found in the Greek essences of earth, fire, wind and water and the four humours mentioned above. Islam has its eight-sided Seal of Solomon and octagonal dance-floor for its whirling sufi dervishes. Old China had its twelve cosmic tones and four-walled paradisaal Palace of Jade.

Some African examples of fourness and its multiples are the four negatives and their eight Shmunu offspring of Egyptian creation myth, the eight Nommos or spiritual guardians of the Dogon of Mali, and the 256 (i.e. four cubed) cosmic elements of the Dogon and Fa diviners: the latter casting their oracles with sixteen palm-nuts. Then there is the four-headed Yoruba god Olari Merin whose figure was set up in a prominent place in a town or village facing the four cardinal directions of north, south, east and west. Similarly, during the re-investitures and East African Nilotic kings (and Egyptian pharaohs) arrows were shot in the four cardinal directions. This idea of four directions also appears in connection with the snake-god deity of the cross-roads, Damballah (a.k.a. Baron Samedi), found in West African derived Haitian Voodoo.

For the Akan of Ghana there are eight matrilineal clans. Likewise, there are eight traditional Akan months during each of which is a special Friday of rest and feasting called the Fofie (octave).<sup>320</sup> The number four also appears amongst the Akan as the four components of the composite soul, whilst this number signifies security and solidarity as a square shaped Adinkra cloth design called Fi-Hankra which means a house that is safe.



*Figure 53: The square Akan symbol for security*

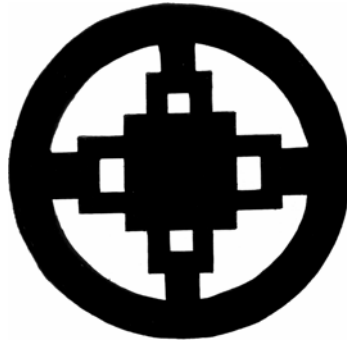
Indian mandalas, although circular, often include an element of fourness: squares, crosses, four colours and so on. This combination is also found in Africa. Some instance that were depicted in Chapter Two are the Central African Yowa ground-sign and the two Akan Adinkra designs concerned with God's

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<sup>320</sup> This takes place eight days after the Little Adaye Ceremony discussed in Chapter Two.



Everlasting Spirit<sup>321</sup> and Togetherness<sup>322</sup>. Another Akan example depicted below is Damedame (chequer board) that represents intelligence.



*Figure 54: The Akan symbol for intelligence*

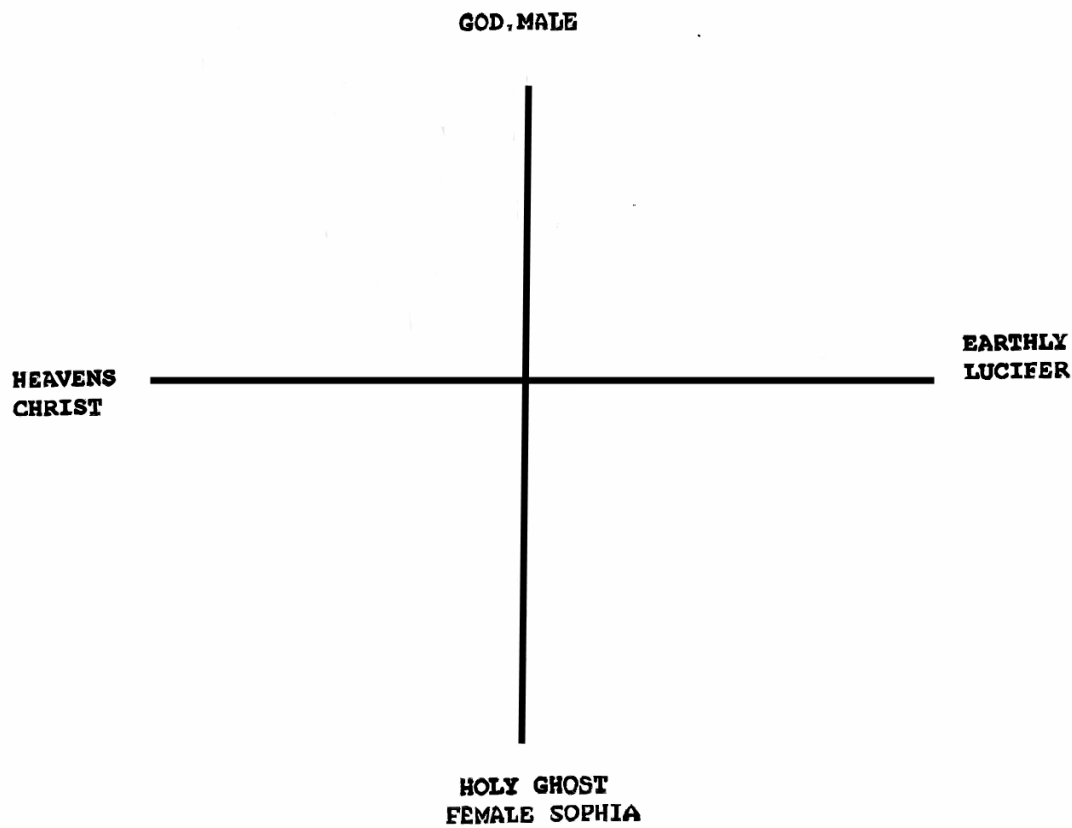
One might think that this idea of fourness does not apply to Christianity with its notion of the Trinity. However there is the four-sided Crucifix, which was an equilateral one in early Christianity and still is for the Greek Orthodox Church. This early centred cross symbolised a double polarity: that of the heavenly Christ and earthly fallen angel/trickster Lucifer, and that of the masculine Jehovah and the Holy Spirit, sometimes conceived as feminine component of the godhead known as Sophia (i.e. wisdom).<sup>323</sup>

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<sup>321</sup> The Akan name is Nyame Nwu Na Mawu (If God cannot die I cannot die). See Figure 33, Chapter Two.

<sup>322</sup> The Akan name is Akoma Ntoaso (Joined hearts). See Figure 40, Chapter Two.

<sup>323</sup> For instance the Gnostic Christians. See E. Jung and M.-L. von Franz' work (1986).



*Figure 55: The old Greek centred crucifix – a Christian mandala*

The Roman Catholics later masculinised the Holy Ghost<sup>324</sup> to Spiritus in the Latin translation of the earlier Greek Bible, whilst Lucifer became totally demonised and equated with Satan. This consequently left an all male Trinity of the Father, Son and masculine Holy Ghost. According to Jungian writers this shift is reflected in the Roman Catholic cross which is top-heavy as if, like the Gothic cathedrals, it is straining heavenwards away from mother nature and the carnal desires of the flesh.

Let me conclude this discussion on circularity and fourness by returning to Africa, where we have already noted earth-signs and cloth designs that combine these two principles. This combination also applies to the various cyclical Akan and Ewe Beats noted in Chapter One. These are all anchored by four evenly spaced felt-beats, all or some of which correspond to the

<sup>324</sup> In the Greek version of the New Testament the word for the Holy Ghost is neutral.

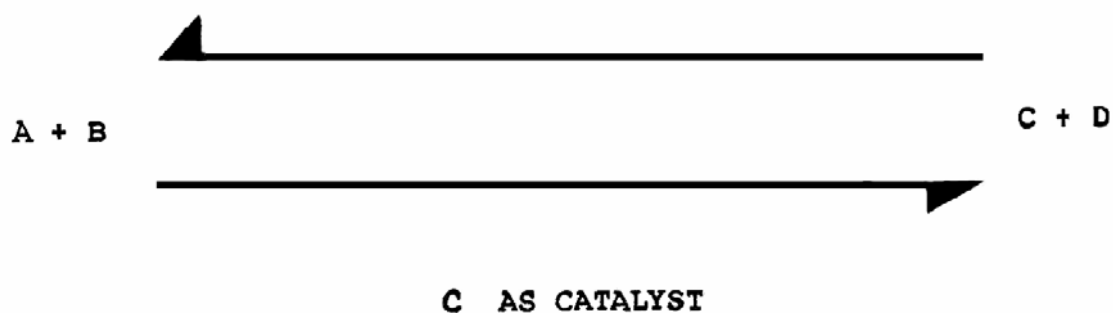
downwards movement of the dancers feet which literally ground the complex polyrhythmic music. Furthermore, Akan traditional priests spin, dance in circles and acknowledge the four-winds that carry god's voice. In short, two important principles for Jung's mandala-like psychological Self, namely circularity and fourness, are actually drummed and danced out in the performance of these West African peoples.

### ***Cybernetic Unity and Information Feedback Loops***

In the cybernetic studies of mind, machines and informational processes the principle of circular equilibrium is found as the feedback loop. Feedback simply means that the output of a system is coupled to its input; or to put it another way, part of the system circles back on itself and acts as a piece of information that may have a positive or negative effect.

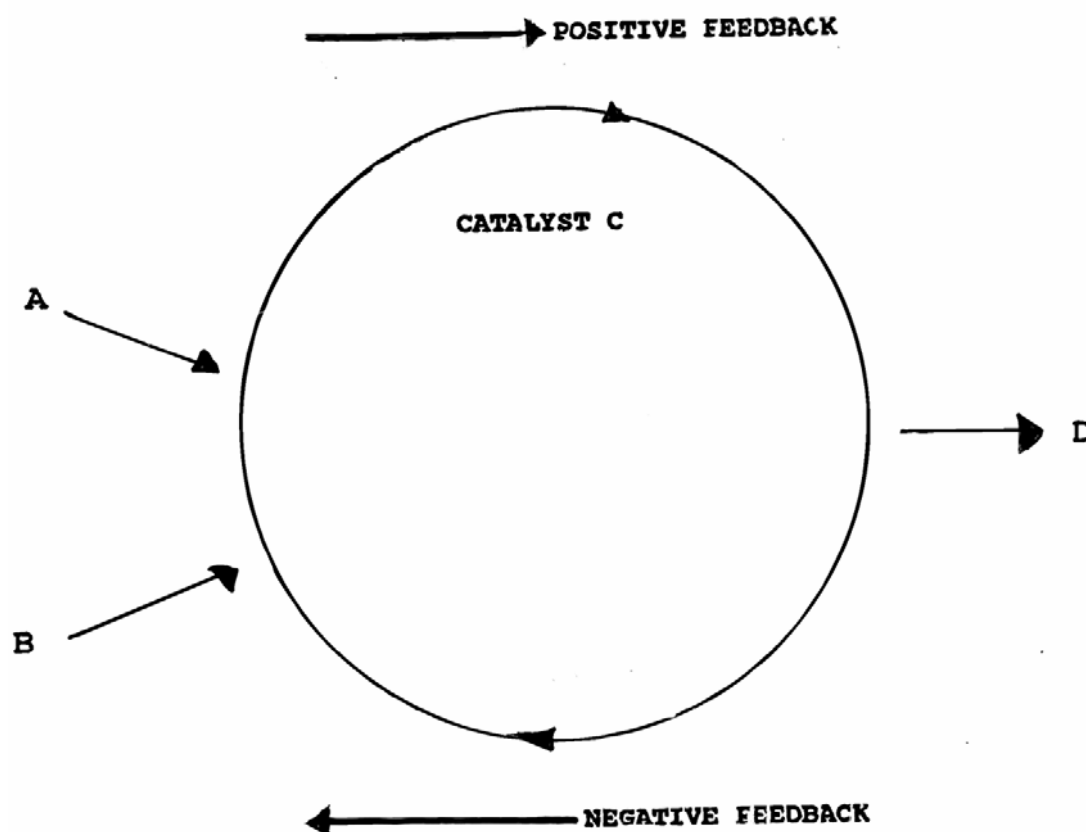
Positive feedback occurs when a returning signal boosts the overall system in some way, as in the various amplifying valves and transistors in a radio, or the reticular activating system of the vertebrate spinal column that excites the overall nervous system. Negative feedback is a result of the incoming information dampening the system. One such example is the governor of steam-engines which, as the pressure increases, spins faster and opens valves which then lower the pressure again. An equivalent in warm-blooded creatures is the sweat-mechanism which reduces high body temperatures by increasing evaporation from the skin. But whether inorganic and organic, negative feedback systems maintain a steady state within minute variations of too high or too low a pressure or temperature.

Feedback is also found in reversible chemical reactions such as certain types of auto-catalytic ones. For example, if two chemicals, A and B produce two others C and D, with C being the catalyst (i.e. booster) of the whole two-way reaction, then the reaction will settle into an equilibrium that can be written as follows.



*Figure 56: An auto-catalytic chemical reaction*

This Figure can also be redrawn as a circle in which the positive and negative feedback that puts the whole reaction into a state of dynamic and oscillating equilibrium can be seen more clearly. I call this a "chemical mandala".



*Figure 57: An auto-catalytic whirlpool – a chemical mandala*

Positive feedback in the above picture is the chemically enhancing nature of catalyst C in the presence of chemicals A

and B. But over-production of the two-way catalyst C (vis-à-vis A and B) will put the whole reaction into reverse, creating a negative-feedback in which the C and D reagents then start to reform back into A and B. Ultimately these oscillations between the two sides of the chemical reaction will die down as the reversible reaction reaches dynamic equilibrium.

However, if new reagents A and B are continually added and D continually removed from the whole experiment, this oscillating system, called a Belousov-Zhabotinsky reaction, will continue indefinitely. In this case the continual circular building up and dampening down of the reaction makes the reagents seem to literally pulse with chemical rhythm as concentric rings, spirals, and other chemical patterns made by the reagents appear and disappear in a regular way.

In biology circular self-correcting feedback systems are called "homeostatic" (literally same state), a word coined by the famous nineteenth century French physiologist Claude Bernard for an organism's ability to maintain a constant internal environment. The most well known example of homeostasis is the biological rheostat system that keeps the blood of mammals at a constant temperature.<sup>325</sup> Activity and shivering increase the body temperature whilst sweating reduces it. However, the biologist Ludwig von Bertalanffy pointed out in the mid 1940's that the dynamic equilibrium of an organism depends on its adaptation to the outside as well as inside environment: which brings us to the concept of dissipative and autopoietic structures.

The term "dissipative" was invented in the 1970's by the Belgium scientist (of Russian extraction), Ilya Prigogine, to describe thermodynamic states of equilibrium such as turbulent vortexes and eddies that spontaneously develop in flowing liquids, gases and energy systems. According to classical thermodynamics, any patterned energy system must eventually break down into a more disorganised or entropic one. Indeed, it is this one-way or asymmetrical process that helps give the universe its historical arrow of time or "Time Operant" as

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<sup>325</sup> For us it is 98.4° Fahrenheit.

Prigogine calls it: a topic that will be returned to in the following Thematic Chapter on asymmetry. Although this entropic law of randomisation occurs at a universal level, Prigogine believes that on the smaller scale it only applies to closed systems, i.e. those that are cut-off from outside influences. For instance, two chemicals solutions diffusing and mixing with each other in a beaker.

But in open or “far-from-equilibrium” systems that are constantly receiving new inputs from the outside and sending outputs into it, things are quite different. For instance, the Belousov-Zhabotinsky type of auto-catalytic reactions described above only continues as long as there is a continuous fresh supply of reagents A and B and a constant dumping of their products. Similarly an eddy pattern created in flowing gases or liquids is an ordered (or negentropic) state that retains its steady shape by sucking in and spinning off energy from the local environment; for the eddy uses some of the surrounding energy of the flowing water or gas to set up positive and negative feedback loops. The resulting amplification and dampening effect causes the eddy to whirl or pulsate in a thermodynamic equivalent to a Belousov-Zhabotinsky reaction. In other words, within the chaotic jumble of turbulent liquid and gas flows there arises small whirlpools of order.<sup>326</sup> Incidentally, this “dissipative” state is exactly the same one, but on a grand cosmic scale, discussed earlier in the chapter in connection with Jantsch’s idea of a “breathing” universe creating order out of its own expanding energy flows.

The Chilean biologist Humberto Maturana extended Prigogine’s thermodynamic “dissipative” notion to living organisms, which he called “autopoietic” or self producing. Like thermodynamic turbulences, autopoietic organisms are homeostatically stable only insofar as they exchange energy with the environment. Like vortexes, they exist on a knife-edge of energy transfer levels. Too small an inflow and the organism dies, too great an inflow, and the organism is overwhelmed.

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<sup>326</sup> However, if the flow pressure becomes too great or too small for one particular turbulent pattern it will break down into the surrounding hubbub, until a new pattern emerges that is stable under the new conditions.

The human brain is of course composed of living tissue and is therefore itself an autopoietic structure that involves chemical, neuronal and also informational feedback. However, research has suggested that not only does the brain utilise informational feedback loops, but also feed-forward loops as well.

The first hint of this came from the work done on brain damaged Russian soldiers during the Second World War by the previously mentioned neuro-psychologist, Alexander Luria. He became convinced that the frontal lobes of the cerebrum are connected with the ability to forecast and anticipate. Then, in the mid 1960's, Grey Walter, one of the first to experiment with the EEG (electro-encephalograph) machine discovered expectancy brain waves emanating from the frontal lobes in patients who were anticipating questions. Finally, the American Karl Pribram (1971) coined the word "feed-forward" to describe the mental loops concerned with intentionally, experimentation and creative play.

Positive and negative feedback and even feed-forward loops are therefore needed to explain self-maintaining physical and chemical structures, homeostatic organisms, and the workings of the active human brain which is not only affected by the past but is also pulled by the future.

### *Conclusion*

The circular fusing of beginning and ends helps in the unification of the African Beat and in the centering of twirling African dancers. Circularity and the Eternal Return appear in indigenous African myth and ceremonial life in a variety of ways: as spiralling worlds, cosmic eggs, reincarnation, life cycles, agricultural and ceremonial rounds and the ritual death and rebirth of cult initiates. Circular emblems of unity are also found in Africa as ancient Egyptian phoenixes and solar discs, Akan Adinkra cloth designs, Central African ground signs, the Dahomean rainbow snake-deity and the forward moving but backward looking Sankofa Bird of the Akan.

As already noted spherical motifs of wholeness crop up in most pre-industrial societies: from Eastern mandalas to dervish dancing, from the Greek harmony of the spheres to medieval

revolving zodiacs, from the philosophers' stones to twirling may-pole dances.

Although classical science and linear thinking broke with these old circular astrological, alchemical and aesthetic notions, some modern thinkers have arrived back at curved conclusions through a more objective route.

Einstein bent the Newtonian/Cartesian space-time grid into a four-dimensional cosmic torus or egg. Reincarnation was brought back into the astronomical picture by a "breathing" universe forever oscillating between Big Bangs and Big Crunches, or between cosmic collisions in higher dimensions. At the subatomic end of the scale Richard Feynman showed us that matter and anti-matter particles endlessly encircle each other in mutual creation/destruction.

Equally circular, and bridging the gap between the macro- and microcosmos are Prigogine's and Jantsch's turbulent vortexes that live on entropic decay. These negentropic entities range in size from biochemical feedback loops to whirlpools, from tornadoes to planetary eco-systems.<sup>327</sup> On an even larger scale are orbiting solar systems, suns, spiral galaxies, gyroscopic Black Holes and the universe itself as a gigantic far-from-equilibrium "dissipative" feed-back loop.

Circularity appears in cybernetic form as the coupling of positive and negative feedback into loops that stabilise everything from steam-engines to informational systems. In biology these circular feedback arrangements are found as part of neural information loops, mental circuits, reflex arcs, homeostatic mechanisms and the reticular activating mechanism of the brain-stem that keeps us alert. Too much positive feedback leads to explosive amplification, too much on negative side dampens down things to stillness.

At the psychological level circular models and motifs representing psychological wholeness have been used by Eysenck and particularly by Jung with his mandala-like depiction of the Self. As pointed out earlier, Freud in his later writings also

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<sup>327</sup> This topic of global ecological cycles will be returned to again in Thematic Chapter Nine on the participatory mode.



came up with a circular psychological theory when he split his single subconscious libidinous drive into mutually self-sustaining life and death forces (Eros and Thanatos).

Both the African musical Beat and the metaphysical Eternal Return involves an enduring cyclical repetition that seems to overcome or suspend time. In the above discussion we have come across this notion of stable periodicity in scientific guise in various ways: endless subatomic mutual pair creation/destruction, a “breathing” and reincarnating universe, steady-state feedback systems, pulsating auto-catalytic chemical reactions and stable vortexes existing within turbulent flows.

Biological life also runs along in regular cycles such as those of the annual seasons, lunar months and the twenty-four hour circadian cycle of alertness and replenishing sleep. I will end this chapter on the topic of the sleep cycle, as within it another cycle has recently been discovered. In humans this mini-cycle is a ninety minute sleep pattern which moves between orthodox sleep and a shorter period of paradoxical sleep. The brain-waves of orthodox sleep (alpha, theta and delta) are slow, but those of paradoxical sleep approach the fast beta waves of wakefulness and are therefore associated with rapid eye movements, high cortical activity and active dreaming. Furthermore, in between orthodox and paradoxical sleep is a period of ultra deep sleep when brain-waves de-cohere into a chaotic jumble of frequencies that temporarily strengthens brain resonance. Through a combination of these factors<sup>328</sup> the sleep cycle is able to cleanse, modify and re-synthesise consciousness every night – so that we are literally reborn afresh each morning.

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<sup>328</sup> Various hormones are also produced during the sleep cycle which are concerned with growth and memory.

## THEMATIC CHAPTER SIX: A DRIVING TOUCH OF ASYMMETRY

In the last two themes I have dealt with time in a rather timeless way. Under the theme of Holism it appear in many scientific guises: gestalt instaneity, Jungian synchronicity, the existential now, time reversal parity, instant quantum communication, Einstein's higher dimensional geometrical time and Bohm's holographic implicate time. Under the theme of Circularity, timeless time surfaced as Einstein's curved cosmos, an oscillating or reincarnating universe, steady-state homeostatic feedback loops and Feynman's endless cycles of atomic particle creation/destruction. But with so much timelessness around in the modern scientific view, the universe should have long ago frozen into eternal immobility.

This same problem of holistic and circular stasis was noted in the African view of things: the mirror-image rhythms of the Beat, the complementary deities of cosmic concord, never-ending reincarnations and returns, an eternal universal spirit and the non-chronological accumulated aspects of African time. Nevertheless and as we have seen, forward propulsion is added to this unchanging or repetitive scenario by asymmetrical rhythms, anti-clockwise spins, Promethean spirits, lopsided tricksters and ritual clowns.

Modern scientists have likewise discovered three asymmetries that create a forward arrow of time<sup>329</sup> and take the physical and informational world out of timeless equilibrium. One is related to entropic decay and Prigogine's "Time Operant" effect. Another is a result of fluctuations during the creation of the universe the produced meta-stable hydrogen. The third is that some subatomic reactions have a specific handedness rather than exhibiting the usual balanced parity.

Before turning to these three physical time-arrows in detail, however, I will first look at the Western musical scale which, like

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<sup>329</sup> See Hawkins (1988) and Hawkins and Penrose (1996) on the topic of the arrows of time.

African rhythmic structures, contains time propelling asymmetries: for the Western scale cannot be neatly divided into equal halves and there is an inherent instability in its harmonic progressions due to a “trickster” seventh chord.

### ***Musical Time: The Western Scale and Trickster Triad***

Asymmetry is built into African poly-rhythmic music and is also found in Western music. One obvious example is that the Western octave of twelve semitones is divided unevenly into intervals of a fifth (seven semitones) and a fourth (five semitones) respectively.<sup>330</sup> This is quite unlike the old Greek octave that, reflecting their love of symmetry, was divided into two identical tetra chords. Another Western musical unevenness which will be discussed here in some detail is that of chord progressions.

As noted earlier, when modulating between keys became fashionable in the seventeenth century, equal-tempering was invented to solve the inconsistent Pythagorean comma that results from creating musical scales from the ascending-fifth system.

It was also during the seventeenth century that the modern laws of chords and their harmonic progression (or Functional Tonal Harmony) were fully worked out by Rameau, Bach and others.<sup>331</sup> But again an irregularity was discovered which could only be solved by making one particular chord, based on the seventh note of the scale, asymmetrical. As will be discussed below, it is precisely this destabilising asymmetry that gives Western scales their forward push. But first we must turn to the invention of the chord or triad that consists of three simultaneously played notes.

As has been mentioned earlier in connection with the cycle of fifths, the musical interval of the fifth had been considered pleasing or consonant for thousands of years. However, the invention of the chord had to wait until renaissance and

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<sup>330</sup> In the key of C this would be (ascending) between C and G and between G and the C above.

<sup>331</sup> The nineteenth century sociologist Max Weber wrote a book on this rationalisation process (see 1958 reprint).

baroque times, when the interval of a major or minor third (e.g. between C and E or D and F) had also been gradually accepted by the general public as consonant. This in turn made possible triadic chords made up of a root note, the major/minor third and the fifth above it.<sup>332</sup>

If this triadic law was to be an internally complete, closed and symmetrical system for any particular key, than it should be possible to apply it to all seven notes of the scale of that key. However, and taking as example the key of C major, the triadic law cannot be applied to the seventh note B. A triad built on this note rather takes us into another key altogether (In fact F sharp)<sup>333</sup>. As a result of this inconsistent and what might be termed “trickster” seventh, the octave in the particular key cannot be closed.

As the distinction between the keys is fundamental to Tonal Functional Harmony, and without which modulation between keys would be quite meaningless, a compromise had to be made to keep the seventh triad within its fixed key. The arrangement decided upon was to make the seventh triad’s last note F natural, rather than F sharp, and so accept a six semitone interval between the triads first and last note (i.e. between B and F). However, this “diminished chord” as it is called, is considered incomplete, disturbing or dissonant. To become consonant it must be pulled in either of two directions within the key. This in the key of C would either be down from the problematic seventh F note to the G, or more importantly up to the tonic C.<sup>334</sup> So with this arrangement Western musicians keep

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<sup>332</sup> Thus in the home-key or tonic of say C major the notes C E G would comprise the C major chord, D F A the D minor chord, E G B the E minor chord, F A C the F major chord and so on.

<sup>333</sup> A triad built up from B contains the notes B D and F# sharp (a semitone after F natural) as the interval B-F natural is only separated by six instead of seven semitones. A quick look at the clock diagram in Thematic Chapter Three on hidden space will confirm this. If the B D F# sharp triadic arrangement is strictly maintained the chord based on the leading note B is still consonant but takes us into a different key from C.

<sup>334</sup> If the key’s fifth note (i.e. G) is added as root, the now four note B diminished chord becomes the “dominant fifth” chord G B D F: but because of its diminished component it still needs resolution. One way is for the upper problematic note F natural to be dropped so the chord becomes a normal G chord ( G B D). A stronger pull, however, is upwards to the tonic in which case

within the particular key (e.g. C) and so ends back at where they began.

The triad on the seventh leading note treated as a diminished chord (and/or the dominant seventh of the fifth note in the scale) therefore produces lopsidedness in the otherwise orderly triadic series, without which things would unintentionally slide into remote keys. But as a consequence of Western music theorists inventing the diminished chord, harmonic tension becomes bottled-up within the original key and is only released or resolved when the unstable seventh triad moves to the fifth, or more conclusively the tonic.

It is this resolution towards the tonic home key that helps produce the harmonic forward drive and chord progressions of Western system Functional Tonal Harmony. Indeed this is why the seventh note of any particular key is called the “leading note”. Of course this release of tension does not have to occur all at once and can be delayed or suspended in all sorts of interesting ways, depending on the skill of the composer. The German Richard Wagner, for instance, was famous for delaying the resolution of some of his compositions for up to three hours. So in a sense it is the very irregularity of the seventh triad that fosters forward motion and novel permutations. Without it there would be no tonal tensions to be suspended, modulated, inverted and played around with.

This melodic tension created by an asymmetrical structure takes us back to the use of uneven time-lines and other rhythms used to create forward drive in African music-making. Indeed, in the case of the agbadza bell pattern it is precisely the destabilising seventh note that heightens tension, but in this case a percussive stroke rather than melodic note. But this driving quality of the “trickster” seventh in tonal or percussive patterns is not so surprising when one recalls (see Chapter One, Figure Nine) that the agbadza time-line and diatonic major scale are rhythmic/scalar analogues of each other.

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the D note of the four-note dominant seventh chord is dropped, B moves up a semitone to the tonic C, whilst F is moved down a semitone to E. This results in the three notes G C E which is one of the inversions of the triad C major (i.e. C E G).

We now move from musical asymmetries to these found in the realm of physics, astronomy and the "arrow of time".

### ***Two Physical Arrows of Time: Metastable Hydrogen and Atomic Handedness***

Metastable hydrogen is the fuel of suns and without it the universe would have decayed long ago. Fortunately, huge quantities of this reactive element were created purely by chance during the Big Bang when matter and anti-matter almost cancelled each other out. What just happened to be left was cosmic material in a ratio of fifteen neutrons to every one hundred protons, plus a large number of free-floating electrons. Because helium is more stable than hydrogen, approximately one third of this early mass of the universe should have become inactive helium. But this hydrogen to helium conversion only takes place at high temperature and so was nipped in the bud when the temperature dropped to below a critical one hundred million degrees: by which time only seven percent of cosmic matter had become helium. The remaining 93 percent was hydrogen frozen out in a highly energetic or metastable form: stable enough unless re-heated up to the critical temperature when hydrogen fuses into inert helium (as in stars and hydrogen bombs). It is the gradual burning up of this locked-up metastable hydrogen which has produced one of the inherent instabilities in the universe.

A second fundamental lopsidedness built into physical matter was discovered in the 1960's by American atomic physicists. They noticed that during radioactive decay some electrons spin-off in a preferred direction and that there was a slight difference in the emission of nuclear particles called koans and their corresponding anti-particles (or more specifically anti-koans). Until then Dirac and others had thought that every atomic particle was paired with a mirror-reflection anti-particle in a balance physicists call parity. In other words the universe does not favour either a left-handed or right-handed way of doing things. This, as mentioned earlier, is why Dirac believed that if one could take an anti-particle and somehow reflect it

backwards in time, one would end up with something indistinguishable from a particle moving forwards in time. Indeed, parity does apply to most particles and anti-particles but not quite to all, as the above mentioned experiments with koans and electron spin demonstrated. So although time symmetry/reversal may apply to some individual atomic particles it cannot apply to the universe as a whole, as it contains some electrons and koans that behave in a unidirectional way. This slight discrepancy is just enough to further off-balance the universe and keep it running forwards.

### *A Third Physical Arrow of Time: Entropy*

Besides metastable hydrogen and atomic handedness, there is a third arrow of time that was briefly touched upon in the previous Thematic Chapter is the entropic crumbling away of order and the resultant creation of Prigogine's Time Operant. The notion of entropy itself derives from the nineteenth-century thermodynamic theory that all organised energy systems in the universe, from stars to steam-engines, gradually run down and wear out. It was quite at odds with Newton's earlier concept of Time Reversal Symmetry. Newton believed that all objects, even if moved by the most complicated impinging forces, could return to their original states if all these forces were reversed. This puzzle of time symmetry versus entropic time asymmetry was finally solved in the late nineteenth century by the Viennese scientist Ludwig Boltzmann. He demonstrated that whereas reversible Newtonian time could be computed for individual molecules and particles, it could not for aggregates of these: which therefore had to be analysed statistically.

At this statistical coarser-grained level time was proved to be asymmetrical or one-way, so things do irreversibly ultimately decay and dissolve into a homogenised equilibrium. It was this process Boltzmann and his contemporaries called entropy. Indeed, nineteenth century scientists came to the pessimistic conclusion that the whole universe was winding-down towards a "heat death" where all matter and energy would become evenly and randomly spread out, and therefore all distinctions and demarcations would be lost.

However, this state of final decay into uniformity has not yet been reached, as the cosmos is still expanding and so only part-way on its long journey to dissolution. So, as mentioned in the previous chapter, there are many "far-from-equilibrium" situations in existence arising from the uneven distribution of cosmic matter, with galaxies, stars, dust clouds, black holes and planets continually pumping out or sucking in energy. It is precisely these disequilibrium states of energy flow that provide the environment for the emergence of pockets of negentropy, or negative disorder: in short order.

As already noted in connection the auto-catalytic feedback reactions discussed in the Thematic Chapter on circularity, Prigogine and Maturana called these pockets of order and organised information "dissipative" and "autopoietic" structures. These are physical, chemical and biological vortexes and eddies that feed on the surrounding disordered entropic current. But as this current towards disorder itself moves forward in time in an inevitable one-way direction, so all the negentropic (i.e. dissipative/autopoietic) structures embedded in it, including thinking ones, grow and die in the shadow of the Time Operant, however well organised and informed they are.

Indeed, the arrow of time is built into every living organism: which is why they react to external clocks such as seasonal change, phases of the moon and the diurnal alternations of day and night. Some living creatures also react to internal biological clocks as well. Examples of these are the beats of the heart, respiratory movements, peristaltic constrictions, brain-waves and the homing devices of birds. Recent research in the United States, by William D. Cohen, Colin Pittendrigh and others, has suggested that even such fundamental biochemical processes as the production of ribonucleic acid may follow a twenty-four hour or circadian cycle.

If asymmetrical time has a physical, chemical and physiological basis it also has a neurological one. The previously mentioned research of Broca, Wernicke, Sperry and Bogen proposes that sequential chronological time is linked to the left cerebral hemisphere. David Loye on the other hand believes that both the right and left brain deals with time, but in different



ways. The left brain hemisphere break times up into a string of discrete events, whereas the right handles large chunks of time: such as before, during and after an event. He calls this right hemispheric time “spatial” or “gestalt time”.<sup>335</sup>

### *Conclusion*

As noted earlier in the book, balanced African symbolic systems can always be tipped forwards. African musical, ritual and metaphysical stasis is broken by pushy uneven rhythms, anti-clockwise movements, ritual buffoons of the clumsy gods and unsettling tricksters of mythical concord.

Likewise, balanced arrangements in Western societies are given a touch of disequilibrium; and a musical example is the unstable seventh chord that seventeenth century European art musicians had to include in their laws of harmony to drive songs towards resolution.

In a like manner modern scientists have had to dynamise their parities, complementarities, equilibriums, balanced equations and chiral cosmos with a touch of asymmetry. As noted, three arrows of time have been added to their models of reality that are enough to tip the scales and push things forwards in a single direction of time. These are Prigogine’s “Time Operant” that emerges from entropic decay, itself a result of the uneven distribution of astronomical matter and space produced during the random fluctuations of the Big Bang. Another initial vacillation of the Big Bang created the second time-arrow, that of meta-stable hydrogen. A third arrow is the handedness of certain types of radioactive decay.

It is these three sources of disequilibrium that got the universe “breathing”, to use Jantsch’s phrase, or what Bohm’s sees as the unfolding of explicate time out of the timeless holographic implicate cosmic code. As humanity is part of the Explicate Order we too grow, age and die under the imperative of these three physical arrows-of-time.

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<sup>335</sup> A part of the brain that is particularly linked to the timing of events and memories is the basal ganglia.

In which ever way human beings deal cognitively with time: as sequential, accumulated or spatial, we all too well know that material and biological time marches relentlessly on. This in turn leads on to the human process of bio-psychological growth and maturation: which is one of the topics of the next Thematic Chapter on mature poise.

## THEMATIC CHAPTER SEVEN: MATURE POISE

It takes years of training for African master-performers to acquire the ability to centre the dancing body with the thinking head, balance the overt and silent, fuse beginnings and ends and even-up rhythmic “heat” with internalised “cool”. It takes years of apprenticeship to become a master carver who can handle emptiness as well as form.

Likewise African priests and elders have to be able to mediate between the living and the dead, move between the esoteric and mundane, and discover the invisible axis within bustling elements and spiralling worlds. They also have to be able to harmonise various opposing social forces such as clan moieties and lineages segments, and know how to orchestrate polyvalent metaphysical systems. One such system uses gender as its basis. Another divides the world into “ascending” symbols derived from fleeting body feelings, and “descending” ones based on the preconceived and abstract cosmological laws. As noted previously these two approaches are reflected in dual, but not necessarily mutually exclusive, religious paths: “hot” cathartic dance-possession cults and the “cooler” ones based on divination, such as the Vodun and Afa of West Africa.<sup>336</sup>

These African ideals of mature wisdom, of inner equilibrium, of juggling multiplicity, of linking the old and new and of being able to simultaneously see things from several points of view is relevant to some areas of modern science and art that will be discussed in this chapter.

We begin with various psychological theories that examine the stages of healthy personal growth and which have developed techniques to decentre the ego, recentre the personality, integrate the body and mind and bring the unconscious to light. In short enhance maturity through a more integrated and less self-centred outlook.

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<sup>336</sup> What in ancient Greece were known as the Dionysian and Apollonian roads of worship.

On the aesthetic level we will turn to the various contemporary Western “back to roots” movements that are therapeutically linking up beginnings and ends, recycling the past to renew the present: a circular humanist paradigm shattered by industrial time and its straight-line march of progress.

We will then move on to areas of modern science that now consider things can be two or more things at the same time, some of which have been discussed before. For instance the figure/ground of gestalt psychology or the complementary nature of Jung’s twin archetypes. Likewise in the hard sciences solid atomic particles have been discovered to also be spacey waves or “wavicles”, seemingly different particles are rotations of the same entity in various forms of mathematical space, whilst particle and anti-particles may be the same phenomena simply moving forward or backwards in time. As previously noted, Einstein has provided three other examples of scientific phenomena being two things at once: namely the inter-convertability of mass and energy, the equivalence of acceleration and gravity and the turning of time into geometrical space. Moreover, entropic disorder and negentropic order and information are now recognised as being two sides of the same thermo-dynamic coin. Indeed, without the “dissipative” structures that separate the random jostlings of entropy everything in the universe would move unremittingly towards the “heat death” of the universe,

In order to deal with the riddle of some scientific objects having a multiplex nature there has been the rise of interdisciplinary approaches. In the hard sciences, for instance, there is the coming together of particle physics and wave mechanics, or thermo-dynamics and information theory: both mentioned above. In the social sciences there is social-psychology that, as will be examined in the final Thematic Chapter on the participatory mode, combines the subjective approach with those looking for objective social laws and facts.

Another case in point is a possible resolution of the polemic between the behaviourist and gestalt schools of psychology that were discussed under the Thematic Chapter Four on holism. As

noted, Behaviourists see consciousness as a passive product of chains of conditioned reflexes, whilst the Gestaltists emphasise the individual's active patterning of the mental flux. In spite of this stark contrast, however, research into right/left brain modes suggests a solution: that analytic and sequential behaviourism on one hand, and gestalt instant patterning on the other, simply reflect the two complimentary sides of left and right brain. In short brain lateralisation studies have created a bridge between these two contending psychologies.

One could say that in the above cases that some inter-disciplinary scientists, like African master artists and elders, have reached the maturity to harmonise opposing points of view.

In this chapter and on this cross-disciplinary topic I will discuss a psychological school that bridges contrasting approaches called body/mind therapy which brings together techniques based on introspection with those based on bodily feelings and movement. The particular example from the hard sciences that will be focused on is the attempt to resolve the flux of the of the quantum world with Einstein's "cool" geometry in and integrative synthesis know as Super-String Theory.

But first we turn to psychologies that focus on the process of growth and maturity itself.

### ***Psychological Stages Towards a Balanced Personality***

Psychologists have long been fascinated by the process of maturation. The famous Swiss psychologist, Jean Piaget, in fact focused his therapeutic researches onto the stages of child growth. During the first stage things are timeless and unstructured for a new-born infant, but it is by the age of four, believes Piaget, that the sense of time and a separate ego identity becomes fully formed. The child's self-centred ego then very gradually becomes the "decentred self" of young adult life when selfless acts of altruism, raising children and even heroism occur. As noted in Chapter Two, in Africa things are arranged so that this transition into adulthood takes place quite quickly. This occurs during puberty rites when disorienting initiation ceremonies thoroughly deflate childhood pre-occupations and

so pave a quick route to the roles and obligations of manhood and womanhood. These adult obligations not only include familial ones but may also, in the case of males, involve young age-set initiates going into battle or standing up to tyrannical chiefs.

Freud considered that healthy children went through three psychosexual developmental stages: oral (breastfeeding), anal (potty training) and genital (procreation). Unhealthy development occurs when a person gets stuck in one of the infantile oral or anal stages. Erik Erikson, on the other hand, divided human growth into eight psychosocial stages and in the process coined the famous expression "identity-crisis" to describe the adolescent one. The final and eighth stage of late adulthood was the time of the appearance (or for some the non-appearance) of what he called "ego-integration".

Jung, also suggested major developmental stages. The first starts with the infantile auto-erotic stage which at three or four years old gradually leads on to the formation of the "adaptive-ego complex", which is directly associated with self-awareness, gender and willpower. However, unlike Freud's concept of the ego being the central point or "I" of personality, Jung's adaptive one is inversely associated with the unconscious Shadow and the Anima (for a man) or the Animus (for a woman). Like Piaget, Jung believes that during late adolescence the child ego temporarily becomes less self-centred during an idealistic period of altruistic aspirations and good works. But then the adaptive-ego reasserts itself again during the long stage of going to work and competing to survive and generally getting on in life. It is only when the zenith of life has passed, believed Jung, that individuals may again start to feel dissatisfied with egoistical achievements and there is a return to non-personal ideals. It is during this Jungian final phase of development that the emergence of a balanced Self can occur through a process of individuation that will be discussed later.

Healthy psychological growth therefore, according to these three psychologists, gradually moves in the direction of a more egoless or less self-centred state; whether one calls it Piaget's "decentred self", Erik Erikson's "integrated ego" or Jung's well-

rounded Self. This is precisely the direction taken by an accomplished African musician who has gone through the musical drill of being able to simultaneously comprehend all the individual Beats, and has reached the egoless realisation that it is not necessary to hog all the lime-light. In short the master-musician has achieved unselfish musical maturity.

### ***Depth Psychology and the Healing Unconscious***

As noted earlier Depth Psychology and its clinical branch of Psychoanalysis was the brain-child of Sigmund Freud. However, three of his disciples, Adler, Rank and Jung, broke with Freud's initial pessimistic view that human personality was fundamentally schizophrenic and forever split between the natural spontaneous life-instinct of the Libido and the inhibitions imposed on it by society, via the repressive Super Ego.

Opposing this view, Adler believed that the thwarting of a child's creative willpower and consequent "inferiority complex" could be overcome in adult life by opening out and sharing experiences. Rank argued that the neurotic complexes that result from repression could be transcended through creating immortal works of art. Jung on the other hand actually got his patients to return to their un-repressed unconscious in order for them to become therapeutically re-balanced and re-centred. I will examine Jung's method in more detail as it touches on the theme of rebirth and rejuvenation found in many ancient and traditional African myths and ceremonies.

Jung called his clinical method of self-realisation "individuation", which is the evening-up of a patient's opposing archetypes by getting them to regress to their unconscious where these polarities arise. This is done through a type of dream analysis that Jung called "active imagination". This Jungian form of meditation involves temporarily dissolving the conscious ego so that its traumas and neuroses are placed in a deeper realm of the mind where both archetypal images and their shadows can be equally recognised and evoked. For example, a woman who has over-repressed her animus, or a man his anima, will have to meet and come to terms with these suppressed polarities at this primordial level. This (with the help

of a wise therapist) may help them get back on a more even-keel when they return to everyday life, for they will have conscious insights into the twin nature of their personalities.

Psychotics, however, never come to terms with their shadow archetypes, which consequently take on a subconscious life of their own that may overwhelm the sick person: either as internal demonic forces, or as anger and paranoia externally projected onto others. Those who do not learn from their archetypal history are therefore condemned to neurotically or psychotically repeat it. Paradoxically, to consciously know one possesses a shadow is to become dispossessed of it.

In the days before modern individuation and other equivalent rejuvenating psychological cures<sup>337</sup>, restorative periods of regression were in the hands of priests and mystics who conducted ceremonies involving symbolic death (i.e. of the Ego), rebirth (i.e. of the Self) and sacred marriage (i.e. to one's repressed Shadow). Regression was also poetically expressed in legends of heroic figures safely returning from long and dangerous journeys beneath the sea, or under-ground, or in the stomachs of mythical beings. Like the Biblical story of Jonah and the Whale, Christ's resurrection from a tomb, the descent of the Greek musical god, Orpheus, into the Hades under-world, and the Egyptian sun-god who passes nightly through the goddess Nut and is reborn each morning between her thighs.

As mentioned in Chapter Two, this rebirth theme was actually ceremonially carried out in many old Mediterranean mystery religions and in African initiation rites. The ancient practice of cult-initiates being "baptised" by total immersion in water is a case in point. A typical African example cited in Chapter Two was that of the young male initiates of the Poro secret-society of the Mende of Sierra Leone who are symbolically swallowed and reborn by the frightening Gbeni masquerade figure. A Western European case referred to by Jung (1956) is the alchemical quest for the Philosophers Stone that transmutes base metals, and also base souls, into noble ones. More modern

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<sup>337</sup> For instance "primal scream therapy" in which patients is encouraged to re-enact passing through the mother's birth canal and taking their first cry.



examples include the initiation ceremonies of the Freemasons and the “born again” movement within Christianity.

Yet another way subconscious archetypal figures have been therapeutically brought to light since ancient times is through states of religious possession and theatrical cathartic emotional release. African possessional trance as part of ritual drama was discussed in Chapter Two, which in psychological terms involves the acting or dancing out of individual and collective archetypes by devotees who are in a temporary state of dissociation or total ego loss. Similar ritual dramas also took place in ancient Greece as the masquerade dances of the Rites of Dionysus. These however, were secularised into Greek theatre in the fifth century BC by Euripides and others. Although of a milder nature than the Dionysian orgies, theatrical performers, nevertheless, still became (and still do become<sup>338</sup>) slightly spiritually possessed: that is give up some of their ego control to become inspired by their artistic muse. Furthermore, their theatre audiences were (and are) still able to let-off emotional steam through laughter and weeping. It was Aristotle who coined the name “catharsis” for this emotional purging.

Let us turn back again to Jung and his therapeutic practice of individuation that draws on the internal wellspring of an individual’s unconscious dreams, inspirations, fantasies and contrasting archetypes. However, individuation can also involve going even further down into the unconscious, to the deepest “chthonic” level of the mind that is prior to the polarities of archetypes and the “categorical imperatives” of space, time and causality. It is these deepest pre-logical levels that generate personal hunches premonitions and coincidences: or what Jung called “synchronistic” events that seem to transcend space and time. And it was Synchronicity that Jung thought to be the basis of some of the old systems of divination that tune into the non-causal by using techniques based on chance; such as Tarot Cards and the Chinese I Ching – and here we must add West African Ifa or Fa. All these tap into hidden unconscious associations by using

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<sup>338</sup> For instance modern Method Acting that encourage total identification with the part played.

the random throw of yarrow sticks, cards or cowry-shells, to create patterns which the diviner interprets through a combination of intuition and more down-to-earth folk psychology.

### ***The Mind/Body Split: The Human Potential Movement and Performance Therapy***

The Human Potential Movement is the broad term for the host of new and re-discovered techniques of solving the split mind/body problem; a dichotomy in Western society that arose through a combination of the Christian-Platonic idea of the superiority of the soul over flesh, augmented by the ghost-in-the-machine dualism of Descartes and classical science. One class of new techniques for uniting body and mind is Bio-Energetics or Rolfing<sup>339</sup> which, like Wilhelm Reich's earlier method, involves massaging out psychological traumas embedded in muscular "body armour". Then there are Encounter Groups which help release psychological and physical inhibitions in a relaxed social setting. From the East comes Kundalini Yoga that claims to tap the mental and spiritual energy of the spinal chord, and acupuncture that seems to heal bodily-cum-mental sickness by re-harmonising the invisible meridians of the body. In contrast to these old Indian and Chinese ways of putting an individual in touch with the inner workings of the body, bio-feedback utilises electronic devices to make a person aware of, and even manipulate, the unconscious autonomic workings of the body; by amplifying them onto a oscilloscope screen.

Human Potential techniques also include the use of music, rhythm and physical movement to unlock and synchronise creative energy and heal the mind/body split. Today we have Music Therapy, Dance Therapy and Feldenkrais Movements<sup>340</sup> that all utilise the "hot" cathartic and "cool" centring power of music and motion. Not surprisingly the use of African poly-rhythmic drumming and dancing is also being increasingly used.

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<sup>339</sup> After the therapy devised by Ida Rolf in the 1970's.

<sup>340</sup> This type of movement therapy was developed by Moshé Feldenkrais in the 1920's.

Indeed the healing ability of music and dance is used today for purposes as far removed as communicating with autistic children, carrying out non-verbal dream analysis, enhancing physical co-ordination, as an educational aid for enhancing mathematical and communication skills and for the traumatised of war-torn countries. For example the War-Child organisation of the famous opera singer Pavarotti set up music therapy units in Bosnia and Liberia.

Ironically, the knowledge that music and dance has the ability to improve the mind, exercise the body, cure ailments, purge emotions, provide inspiration, foster communion and harmonise the soul has been known since time immemorial: through Chinese T'ai Chi, the sacred pantomimes and mystery cults of antiquity, Pythagorean magico-mathematics<sup>341</sup>, dancing sufi dervishes and the ethos of the seven ancient musical modes.<sup>342</sup> Today, this old therapeutic performance wisdom is still found in the masquerades and possession dance-music of Africa.

### ***Getting to Roots: Linking the Past with the Present***

The symbolic linking of beginnings and ends permeates traditional African and pre-industrial societies: circling musical Beats and dances, reincarnation and the Eternal Return, life cycles and ritual rounds. These ideas are also pictorially depicted as Eastern mandalas, archaic spiral motifs, African ground signs, rainbow snakes and tail-swallowing serpents. Others are the ancient Graeco-Egyptian Phoenix bird that continually dies and rises from its own ashes and the Akan Sankofa bird with its proverbial "back to roots" message.

The "back to roots" theme has also played an important part of Western European history. A striking early example occurred during the Renaissance or "re-awakening" after the medieval

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<sup>341</sup> The close association during antiquity of music, arithmetic, geometry and astronomy persisted into the Middle Ages, evidenced in the practice then of combining these four subjects into a single university degree known as the "quadrivium".

<sup>342</sup> "Affections" was the baroque name for the various moral and emotional states that were believed to be generated by the ancient Greek and early Christian musical modes.

Europe rediscovered ancient Greek maps and manuscripts on philosophy, aesthetics and science that helped spark-off the age of discovery and invention. A later example is the eighteenth century Classical period of Western art that in a reaction to the over-ornamentation of the preceding baroque period drew on the clean symmetries and the clear mathematical proportions of ancient Greek art and architecture. Yet another collective Western return to its pagan roots, which we will return to again shortly, was nineteenth century Romanticism which was inspired by the folk culture of Europe's pre-industrial past.

As mentioned earlier, a way the continuity of the past and present was symbolically united in some pre-industrial and African societies was through initiation rites. These ceremonies involved some sort of ritual or visionary rebirth and were supervised by elders and priests. In modern parlance the rejuvenated initiate or enlightened dreamer is psychology "cured" by medical therapists and their clinical "ceremonies" include psychoanalytic dream therapy, primal scream therapy in which patients re-enact out their birth<sup>343</sup> and Jung's regressive individuation that puts a person in touch with the archaic levels of the mind. But whether old initiation rites or modern clinical therapy the goal is personal maturity.

Because Jung believed that the unconscious was collective as well as personal, he also believed that whole societies periodically drew on archaic images. One evidence he produced for this idea was the constant appearance through time of circular and/or four-edged mandalas of wholeness<sup>344</sup>. However, Jung believed that for many people in our secular and industrial age the old rebirth-ceremonies and collective emblems of personal and spiritual wholeness had become played out. They had changed from being mysterious vitalising metaphors to dead fossilised signs, particularly after the eighteenth century

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<sup>343</sup> This technique involves patients screaming after wriggling through pillows and other obstacles pressed down on them to mimic them passing through the constrictive birth canal. It was developed by Arthur Janov in the 1970's.

<sup>344</sup> Examples include the Chinese Yin and Yang, Christian halos and crucifixes, the counter-clockwise Tibetan swastika, the Greek tetraktys, the alchemical rotundus and reincarnating wheels-of-life.

when Western societies became increasingly secular, linear and materialistic.

However in the early nineteenth century there appeared an artistic and literary movement known as Romanticism<sup>345</sup> that, as discussed in Thematic Chapter Three on hidden space, anticipated some of the ideas of psychologists concerning the subconscious. The Romantic Movement also raged against what William Blake called the “single vision” and “dark satanic mills” of science and industrialism and was rather interested in the past: old legends, fairy tales, pagan gods, medieval knights and peasant folklore<sup>346</sup>.

Germany was one of the main centres of Romanticism. However, the economic depression which followed the First World War and the harsh terms of the Treaty of Versailles, produced a second and more sinister retrogression to the past amongst Germanic people. Jung became very pessimistic at that time over the appearance of the archaic Teutonic blood and iron deity like Wotan in the dreams and fantasies of his German patients. His forebodings were for good reason, as by combining this pagan regression with the myth of racial superiority and the clever use of a reversed (clockwise) Aryan swastika<sup>347</sup>, Hitler was able to consolidate Nazi power. The German nation, once the pinnacle of rationally ordered European civilisation was unable to integrate its past in a positive way and was overwhelmed by its own repressed and irrational collective archaic shadow.

Since the Second World War and the defeat of fascism, and particularly from the 1960's, new and healthier regressive waves have washed over the West. These post-war “back to roots” styles and fashions are characterised by rainbow warriors rather than war-gods. As already mentioned in Chapter Three this

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<sup>345</sup> The word itself derived from “Romanesque” a term that describe the Middle Ages and its Gothic architecture

<sup>346</sup> It was during this period that, for instance, the German Grimm Brothers collected their famous fairy-stories and composers such as Schubert, Schumann, Chopin, Liszt, von Webern, Wagner and others drew inspiration from European folk music and legend.

<sup>347</sup> Hitler reversed the Nazi Swastika because he loathed left-handedness. Indeed, after exterminating the Jews, gypsies, communists and homosexuals, he planned to exterminate left-handed people.

modern version of Romanticism has also been characterised by an interest in old and Oriental religions and philosophies, as well as organic farming, ethnicity and African and World music. All these trends are recycling the past into the present and by so doing are helping create the new “whole earth” symbols so necessary for the emerging global consciousness of our information age.

Paradoxically, even science-fiction and science have become part of this quest for archaic symbols of wholeness. Jung believed that the numerous claimed sightings of flying saucers and other round or spherical UFO phenomena since the Second World War is simply a new and technological way of expressing the ancient circular holistic symbols that secular civilisation has lost. In short halos and angels in scientific guise. Science fact, or rather rocket research, has also supplied us in recent years with the image of the earthly globe seen hanging in space. This resonates so strongly with us today that it can be considered to be one of the most important mandalas for the Third Millennium.<sup>348</sup>

Whilst African Beats and reincarnating ritual rounds join old endings to new beginnings, so industrial societies discover new circular symbols and the restoring powers of regression, recycling, and rediscover their roots.

### ***Super Strings: Uniting Hot Flux and Cool Geometries***

For over two millennia scientists have been trying to find fundamental patterns in the variations of nature: from Aristotle's Four Elements and Humours, to the atoms and corpuscles of Enlightenment scientists to the Periodic Table of the nineteenth century Russian chemist Mendeleyev<sup>349</sup>. This trend continued during the twentieth century in spite of the discovery of an ever-increasing number of subatomic particles

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<sup>348</sup> Another of course is the circular peace sign, the emblem of the Campaign for Nuclear Disarmament.

<sup>349</sup> It was him who discovered the octave patterns in the chemical reactivity of elements when he arranged in order of their increasing atomic weight.

and that two new universal forces, "strong" and "weak" nuclear forces<sup>350</sup>, had to be added to gravity and electro-magnetism.

This integrative twentieth-century effort occurred when New Physics began fitting these proliferating atomic particles and forces into various Grand Unification Theories (or GUTs) that combined two seemingly contradictory but internally self consistent theories. One was particle or quantum physics with its "hot" world of probability patterns and atomic flux. The other "cooler" Einsteinian relativistic explanation was that matter and motion was simply an aspect of geometry, albeit a complex multidimensional one. Both these approaches have been experimentally proven right, but it is difficult to reconcile them as particles are treated by quantum physicists as dimensionless points, so no geometrical theories can possibly be applied to them.

The first move towards a single "meta" or Grand Unification Theory occurred in the 1970's when electro-magnetism and weak nuclear forces were combined by quantum physicists into a single "electro-weak" force which, in turn, became connected to "strong" nuclear forces. In this correlation these three universal forces are treated as particles<sup>351</sup> and unified by a theory known as "Super Symmetry".

However, quantum physicists were unable to integrate the fourth force of gravity into Super Symmetry by discovering a "graviton" particle. At the same time gravity has been perfectly well explained by Einstein's General Theory of Relativity as having a geometrical basis: a contention subsequently confirmed experimentally. If gravity is indeed geometrical (i.e. curves in space-time) then it is no wonder that it cannot be reduced to a particle for, as just mentioned, particles are dimensionless points to which no geometrical theorems can be applied.

A Grand Unification Theory which appears to get around this conundrum between the geometrical Relativity and pointillistic Quantum approaches is "Super-String" or "M" Theory. This

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<sup>350</sup> "Strong" nuclear forces are those which hold the quarks, neutrons and protons of an atomic nucleus together. "Weak" nuclear forces cause radio-active decay.

<sup>351</sup> These three particles are the photons of electro-magnetism, the W and Z particles of "weak forces", and the gluons of "strong forces".

posits that what we treat as a subatomic particle is only a part of the picture, as a particle also has a geometrical extension in higher dimensions than our normal four. So a particle is not a point but rather the normal-dimensional tip of a multidimensional length of Super String. Quantum Mechanics can therefore be applied to a Super String (as a point), and so can Relativity (as an object with length). But the price that is paid is to have an additional seven extra dimensions to our normal three of space and one of time.<sup>352</sup>

This multidimensional idea actually goes back to the 1920's when the Russian scientist Theodor Kaluza and the Swede Oskar Klein tried to go one better than Einstein by proposing that not only gravity, but also electro-magnetism, was a property of curved space-time. To include this extra parameter they had to add an extra dimension to Einstein's four, but this extra fifth dimension is too tiny for us to notice in our everyday world. However, when weak and strong nuclear forces were discovered things became so complex that this geometrical scenario was shelved until 1984. That year the British physicist Michael Green and the American John Schwartz mathematically applied Kaluza-Klein's idea to all four universal forces and came up with the eleven-dimensional Super-String Model.

As in the earlier Kaluza-Klein hypothesis, the curvatures of the extra dimensions are infinitely too small for us to notice. The reason proposed by Super-String theorists for this is that a few moments after the creation of the universe during the "inflation" period of the Big Bang only the four dimensions of space and time expanded, whilst the higher seven became relatively smaller. Indeed, they are now so shrunken that they only operate on the subatomic scale. The curved topology of this shrivelled micro-world is now thought to exist as a pre-geometry behind our macro four-dimensional reality.<sup>353</sup>

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<sup>352</sup> For some easy to read materials on Super Strings see De Roo (1986), J. Ellis (1986), M. Green (1986), and Witten (1986), Freedman and van Nieuwenhuizen (1985) and B. Green (2000).

<sup>353</sup> In fact, it is within these higher dimensions that Turok and Steinhardt (2002) believe the Big Bang is created, for it is the super-dimensional collision of two universes (themselves existing in normal and expanding three dimensional space) that produce the initial explosive cosmic fireball. As mentioned earlier in the



Quantum physicists are happy with Super Strings (or the more recently postulated Super-Membranes<sup>354</sup>) because everything can still be treated, in our four dimensions at least, as interacting particles. Einsteinian physicists are equally happy since they can geometrically twist and manipulate the multidimensional Super Strings/Membranes as much as they like in order to produce the various properties of particles. For example, open Super Strings/Membranes are thought to be associated with gravity and closed looped ones with the other three universal forces. Moreover, like musical strings and membranes (such as drums), both open and closed Super Strings and Membranes spin and vibrate to produce harmonics or standing waves: the degree of vibration determining the mass of the particle.<sup>355</sup>

In short, Super String/Membrane Theory has combined the “hot” multiplicity of atomic flux with the “cool” geometrical continuum of Einstein. Furthermore, Super String/Membrane Theory has moved us away from Newton’s clockwork universe to one of their being a vibrations hidden behind our everyday world, bringing it to a notion also hinted at in ancient and African intuitions: Egyptian vibrational neters, the ancient Greek harmony of the spheres, Pythagorean magico-mathematical overtones and Africa’s buzzing attachments to drums, kazoos, xylophones, and hand-pianos that gives them soul.

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book, these collisions are periodic with these universes exploding into existence, moving away from each other and then over eons of time gradually moving towards each other; finally colliding, exploding and being “reborn” again. All this occurs within higher dimensions, but whereas Super String theory suggests that these are infinitely small, Turok and Steinhardt believe that one at least (possibly connected with gravitational effects) operates on such an enormous scale that it can contain two oscillating universes.

<sup>354</sup> Since 1995 a new development in super string theory known as “M” theory postulates that it is not so much a matter of vibrating one dimensional strings but rather vibrating two (and even higher dimensional) membranes or “branes” (see B. Green, 2000). Nevertheless, it is still the resonant vibrational factor that determines the nature and strength of the force or particle.

<sup>355</sup> In the case of the graviton Super String, for instance, there is no vibration at all as gravity has no mass.

## *Conclusion*

Mature African master-musicians and dancers have to know how to handle a multiplicity of opposites: rhythm and counter rhythm, body and feet, the ordered and spontaneous. They also have to be able to see things simultaneously from differing perspective: as rhythmic figure or ground, as ends that are beginning, and as the various angles and rotations of a polyrhythmic cycle. Very important too is their ability to knit rhythmic energy together inside the collective Beat: what African American jazz musicians would call the application of "daddy cool" to the "heat of the beat".

As noted in Chapter Two, this distinction between surface activity and inner order is also found in African socio-symbolic belief systems. These are the "schismatic" and "ascending" symbols based on segmental social forces and fragmentary sensual feelings. And on the other hand "centripetal" and "descending" symbols founded on well-defined notions of clan stability and cosmological order. This delineation is also ritually institutionalised in heated possessional and calmer divination cults.

The African polyphonic ideal is therefore that of acquiring an egoless maturity. Not to be self-centred but to be open enough to balance opposites, to orchestrate multiplicity, to turn ends into new beginnings, to combine the hot and the cool and simultaneously appreciate all points of view. This wisdom and poise is learnt gradually, the young novice from the master performer and the apprentice by the master craftsmen. Moreover, adults go through initiation and rebirth ceremonies, whilst priest and priestesses are tested by ritual seclusion and purification. By the time one is an elder or sage one has passed through all the various transformation points of one's personal life cycle and has gained the wisdom of esoteric knowledge and of "cooling the heart".

All this sounds remarkably like some of the ideas of the psychologists Freud, Erikson, Jung and Piaget discussed in this chapter. They have all come up with various schemas which all involve a series of clear "life cycle" stages that are necessary for

maturation and healthy development. Moreover, the schemas devised by the latter three psychologists also include a point where the self-centred ego has to disappear in order for it to be re-born as the "integrated ego" or "decentred self". These similarities between traditional Africa and modern psychology are not so surprising, if one recognises that in modern society the therapeutic role of dancing prophets, priests and diviners have been largely taken over by clinical therapists. Nevertheless, in order to cure their patients, psychologists have hit upon the same insights as those of the sages and master performers of old.

Another ancient insight is the recognition of the link between beginnings and endings: rhythmic rounds, eternal returns and reincarnations, life cycles and spiralling worlds.

Modern thinking has also come with notions that fuse beginning with ends. The hard sciences, as discussed in Thematic Chapter Five on circularity, have produced Einstein's curved space-time and "cosmic egg" and various models of an oscillating and "breathing" universe. In this chapter we have also come across psychologies and social movements that attempt to link the old with the present. There is Jung's Individuation or Active Imagination that are self-realisation techniques that tap the archaic collective consciousness for personal therapeutic reasons. On the more social level there are the various Western "back to roots" movements: the ancient Greek fashion during the European Renaissance and classical-art periods, nineteenth-century Romanticism, and numerous current trends that rediscover ethnic roots, old farming practices, ancient philosophies and peasant folkways.

Like African master artists and elders modern scientists have also become adept at juggling opposites and seeing things simultaneously from several perspectives. As already noted objects can at the same time be figure and ground, wave and particle, matter and energy, or Einstein's space-and-time.

One specific class of opposites discussed in connection with the African worldview are the figurative terms "hot" and "cool" which combines a number of polar concepts such as diversity and

unity, the overt and internal, ephemeral impressions and lasting inference.

In scientific nomenclature this dichotomy is found in the distinctions between, the concrete and abstract, the inductive and deductive, the heterogeneous and homogeneous. Indeed, attempts to reconcile “hot” manifest multiplicity with “cool” hidden order, runs through the history of scientific European thought right back to ancient antiquity.

In ancient Greece it occurred in the speculations of Heraclitus and Democritus, whose sizzling atomic flux was opposed by the unchanging eternal spirit and essences and forms of Parmenides, Plato and Aristotle.<sup>356</sup> In medieval Europe this arguments appeared in the Catholic Church as the Nominalist and Realist philosophies that were respectively based on in the deductive top-down and inductive bottom-up forms of reasoning<sup>357</sup>. During the Enlightenment period this same philosophical debate reappeared again as Rationalism, that posited that all knowledge stemmed from “cool” reason and British Empiricism that put the “hot” fleeting senses first.<sup>358</sup>

It was also in Enlightenment times that the experimental inductive approach became the cornerstone of the scientific method. As a result, during this period “classical” science systematically classified, measured, timed and weighed the raw data of the natural world. Indeed, for a while it began to look as if all the teeming complexity of the world could be whittled down to a small number of immutable atoms, straight lines, basic laws, first principles and fundamental formulae.

From the end of the nineteenth century, however, this “cool” classical reductionism was thrown into doubt when new theories suggested that natural phenomena arose from shifting

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<sup>356</sup> For the more down experimentally minded Aristotle, Plato’s spiritual “essences” of matter became its secular “form”.

<sup>357</sup> The Nominalists followed Plato’s speculative and non-experimental deductive approach whilst the Realists were more enamoured with the experimental inductive methodology of Aristotle that was based on hard facts.

<sup>358</sup> An attempt was made by the eighteenth century German philosopher Immanuel Kant to reconcile these two opposing philosophies by suggesting that although there was a mental flux, there were also pre-existing “categorical imperatives” that organised an individual’s notion of space, time and causality.

fluctuations rather than rock-steady mechanistic laws. The invention of the steam engine resulted in thermo-dynamic entropic heat laws based on statistical chance rather than exact mathematical precision. Darwinian theorists suddenly discovered haphazard mutations. Mathematical logic sprouted infinities and random numbers. Behaviourist psychologists suggested that the mind was conditioned through trial-and-error.<sup>359</sup>

Even the attempts of hard physics over hundreds of years to reduce multiplicity to lineal mechanical regularity ended up with ultra-hot theories. One was the universal entropic Heat Death. This was followed by the multiple frames-of-reference of astronomy and the probability patterns of atomic physicists. In fact, by the early twentieth century matters had become so red-hot, so relativistic and so chancy that scientists had to devise new ways of “coolly” handling and modelling reality, other than the simplistic reductionism of classical science.

As mentioned in the previous chapter above, some ways they have done this is by freezing time through turning it into endless loops and fixed geometries, or by accepting the hard but paradoxical fact that things can be two contraries at the same time. This in turn has led to the growth of a multi-disciplinary approach that combines two or more different contending areas of science. For instance the wavicle theory was a product of both particle physics and wave mechanics. Turbulence studies bridge the gap between thermo-dynamics and information theory. And as will be discussed in the next Thematic Chapter, “chaos theories” mathematically relate two seemingly mutually exclusive areas of sciences: the study of deterministic systems and the study of random or “stochastic” ones.

The example we have examined in this chapter is Super-String or Membrane Theory which attempt to settle the long-standing dispute between the proponents of two schools of physics: those who explore the “hot” and dicey quantum world and those who prefer the “cool” orderly geometry of Einstein’s space-time. To do this Super-String theorists have had to create a

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<sup>359</sup> Behaviourists were influenced by Darwinism as they claimed that the mind was “conditioned” through a process akin to the “survival of the fittest”; i.e. those responses that worked best were retained.

meta or multi-discipline that embraces the diametrically opposed quantum and relativity approaches. Like African master artists and elders they have had to harmonise different and seemingly opposing points of view: unity and multiplicity, the particular and the over-all.

Psychology is also uniting seeming opposites. Depth Psychology attempts to harmonise the conscious and unconscious whilst gestalt techniques are based on figure-and-ground relationships. Curing the body/mind split involves both psychological self-realisation techniques and ones based on the body such as bio-feedback or deep massage. On the other hand, movement and dance therapy combine "hot" catharsis with "cool" centring. Moreover, the two supposedly opposing behaviourist and gestalt schools of psychology have been, to some extent, resolved in brain lateralisation studies.

In Africa the beginning and ends are not separated, the hot "many" and the cool "one" are not mutually exclusive. All are different facets of the same sonic, spiritual or social symbolic systems that are only comprehended by master-musicians, poised dancers, mature elders or wise sages. This same holistic wisdom is now being presented in new guise through some modern symbolic systems; i.e. "scientific theories". Proponents of these new non-reductionist and non-mechanistic approaches are able to handle opposites, cross-reference each other, combine diverse techniques and in some cases orchestrate previously supposed antagonistic theories and methodologies within new meta-disciplines. Furthermore and as will be discussed in the next two Thematic Chapters, some modern researchers are also reaching the "mature poise" of being able to bring together other realms considered totally antagonistic: namely those of determinism and freewill and those of the observer and the observed.

## THEMATIC CHAPTER EIGHT: FREEWILL AND DETERMINISM

As noted in Chapter One, to become an accomplished musician or seasoned dancer in Africa not only involves mastering laid-down rhythms, moves and other performance rules, but also being able to spontaneously improvise.

There are many modes for this open creative expression. There is the free recitative prose and ad-libbed poetry of the singer-cantors, the long solo passages on the master-drums, the endless variations on a cyclical theme, the conversation between the talking drummers and dancers: with dancers themselves making unconventional moves as well as ritualised ones.

Here, however, we are interested in just three specific types of rhythmic innovation. Firstly, “swinging” within the silent intervals and syncopated spaces of the musical Beat. Secondly, extemporising within the huge combinational potential of its multiple rhythms. Thirdly, choosing which angle, orientation or entry (or departure) to take within the polysided and circular Beat.

It is these creative skills that enable an African master performers to balance rhythmic improvisation and discipline, spontaneity and ritual control, internal creativity and the collective rules of the musical game: in short freedom and necessity.

As noted in Chapter Two we find this African balance of free-will and determination even beyond musical parameters, as it is the very understated nature of African cosmological creators and codes that allows priests and elders to “swing” by interpreting the spirit rather than the letter of the law. For instance, besides just being the regulators of social protocol, it is they who organise the rituals of taboo-breaking, licentiousness and free expression that punctuate ceremonial order. African priests and elders are also able to play around with multiple permutations and orientations offered by polytheistic religions, polycyclic calendars and polycentred social-systems. Furthermore,

African destiny, as revealed by diviners, is a potential predisposition rather than an immutable predetermined fate.

The question of free-will and spontaneity versus objective determinism and social constraints has been a major pre-occupation of contemporary Western philosophers, psychologists and linguists. During the period of classical science determinism reigned supreme and subjective free-will was demoted to an illusion, a secretion of the brain, a ghost in the machine. Indeed how could there be freewill when, according to the famous Enlightenment scientist Laplace, everything in existence would one day be totally computable and predictable.

However in more recent years there has been a paradigm shift away from this fatalist view. Just as creative swing and multiple choice are incorporated into traditional African musical law-and-order, so contemporary Western thinkers are adding a human touch to deterministic models of human behaviour and hard science.

The question of personal freedom in modern psychology has already been touched upon in connection with Jungian individuation and the unblocking of creative energy through various body/mind techniques. Here in this chapter we will add two more psychological methods that specifically enhance creative thinking: Arthur Koestler's "bi-associationism" of mental matrixes and Edward de Bono's "lateral thinking" between the logical left and insightful right brain modes.

I will continue with these contemporary challenges to determinism by also discussing the "deconstructionism" of Post-Modernists and the problems of indeterminacy posed by linguistic interpretation.

Two areas of the hard sciences where determinism is now being questioned will also be considered. One is chaos theory that goes beyond the older mechanistic cause-and-effect models of classical science. The other is quantum indeterminacy and how this subatomic phenomenon might effect active thinking.

But first we will turn to the creative "now" of existential philosophy and its impact on fulfilment psychology.



### *Existential Freedom and Fulfilment Psychology*

Philosophy developed a special branch in the mid-twentieth century to specifically look at the subjective state of freedom that exists in the existential "now". Existential philosophy was influenced by Phenomenology and both highlight the acute ontological difficulty in bridging the gap between the outside world and the subjective image of it. In other words the effort in categorising, objectifying, figurating and "intending" reality.

Existentialists particularly focus on this active moment-to-moment modality which they call "praxis", a process that is vital for structured consciousness but is usually largely unconscious and pre-reflexive. Unfortunately, we are sometimes so overwhelmed by having to incessantly create and recreate internal images of objective reality that the whole system suddenly collapses like a pack of cards, as objectified consciousness implodes back into the pre-reflexive. It is the resulting giddy loss of nerves that the famous French Existentialist writer Jean Jacques Sartre named "Nausea", the title of a famous novel on the subject.<sup>360</sup>

It seems that whether in music or mind, too much freedom results in a cacophony, vertigo or manic fears. On the other hand too much determinism produces lifeless songs and rigidity and ritualised behaviour.

Existential freedom can become particularly excessive in societies, like our present age, where old values are crumbling away and there are just too many untried ones to replace them. Erich Fromm is one early existential psychologist who studied this topic of ultra-freedom and then published the well-known book *Fear of Freedom* in 1941. He was concerned with the choice overload felt by many individuals because so many tried and trusted mental props were being replaced by a fast moving succession of new ones. In this situation things can become rather arbitrary and even meaningless and so choice and intention becomes difficult: producing a neurotic state of fearful existential freedom. A mild and mundane case of this "existential shock" can occur when a person is faced for first

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<sup>360</sup> His major theoretical work on the topic is *Being and Nothingness* (1956).

time with a five hundred television channels, or has to decide which brand of sixty varieties of tooth-paste to buy at a super-market.

In spite of the nerve-racking side of Existentialism it has led to an existential re-appraisal of psychology by highlighting the importance of the otherwise largely hidden process of the creative categorisation of reality. In particular it influenced the Fulfilment Psychologists who came to the fore in the United States just after the Second World War as a reaction against the then current extreme psychological determinism of the "Behaviourist" school of Skinner and others.<sup>361</sup> Fulfilment Psychologists like Carl Rogers<sup>362</sup> and Rollo May utilised existentialism and Husserl's phenomenological notion of the "transcendental ego" or "categoriser of categories" to explore how individuals fashion their own internal meanings and frames-of-reference. They were therefore interested in how people creatively transform themselves within society rather than being delimited by it. Erik Erikson and Abraham Maslow<sup>363</sup> called this therapy of tapping the pre-reflexive unconscious or ground "self actualisation".

Just as silent spaces provides African music with rhythmic swing, so existentialist philosophers and fulfilment psychologists believe it is from mental space that conscious psychosocial categories are constantly re-worked, re-figured and re-defined.

### ***Permutational Choice: Bi-Associationism and Lateral Thinking***

Quite a different psychological approach to the "fulfilment" fostering of creative mental space is the one that sees innovation arising from the juxtapositioning of different mental structures; or to put it another way, multiple choice is provided to a person by the interactions between their different mental

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<sup>361</sup> See for instance Skinner (1957) and Watson (1980).

<sup>362</sup> Rogers' psychotherapy that he developed in the 1960's and 70's was a client-oriented one that allows the patient to speak and downplays the role of a probing and all-knowing analyst.

<sup>363</sup> See 1968. It was Maslow who came up with the expression "peak experiences".

matrixes and modes. In this case it is not preconscious space that is tapped but rather the permutational power of mental “poly-structures”. Using the analogy of African music, this is the equivalent of moving away from creative swing towards the endless cross-rhythmic combinations that can be generated within polyrhythmic structures.

An example of the fruitful juxtapositioning of different mental structures was discussed earlier in connection with the synergy and “co-action” between the left and right brain modes. The late Arthur Koestler also believed that it was the association of disparate mental frames-of-reference, although not necessarily the left and right-brain ones, that lay at the heart of the “Act of Creation”<sup>364</sup>. Like the Fulfilment Psychologists, Koestler opposed the robotic ideas of the Behaviourists. But whereas the Fulfilment Psychologists were concerned with how mental modes and frames-of-reference are produced from the pre-reflexive conscious, Koestler believed that creativity arises from the Bi-Association of any two frame-works. The resulting flow of creative energy is then expressed in three ways: the explosive release of comic laughter, the slow savouring of poetic allusion and metaphor, and the intellectual insight or “eureka act” of the scientific discoverer.

Both Edward de Bono and Gregory Bateson had ideas similar to Koestler’s Bi-Associationism. Bono’s Lateral Thinking is basically a technique for nurturing creative associations between sequential logic and the insightful intuitive ways of thinking: in other words between left and right brain modes. Gregory Bateson’s (1973) concept of “Learning Three” also involves juxtapositioning mental matrixes. “Learning One” is equivalent to the Pavlovian behaviourist reward and punishment mode and “Learning Two” is understanding the rules of the game. But with poly-contextual “Learning Three” one can actually compare the rules of different games and so can be in the creative position of being able to actually change the rules of the game,

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<sup>364</sup> The title of his famous book (1964).

### *Constructionist, Deconstructionism and Poetic Difference*

As discussed in the Thematic Chapter One on polarised tension, Structuralism treats cognition as a product of sensory-motor, linguistic and mythical binary codes. One might assume that codes and creativity could never mix, but we have already seen how Chomsky's Transformational Grammar is capable of providing the infinite number of semantic variations needed for freedom of speech. Piaget calls this ability to pick and choose within a network of binary possibilities "constructionism". Likewise, the anthropologist Lévi-Strauss does not consider the mythical codes of a society he is analysing to be exact blue-prints for behaviour, but rather scaffolds for all the possible permutations of conduct in that particular society. Being himself a musician Lévi-Strauss compares the play within binary behavioural structures to the variations on a musical theme. It is these tuneful insights which led him to claim that music is the supreme mystery of human knowledge upon which all other sciences stumble.

In spite of the "constructionism" and semantic variation provided by structuralist binary alternatives, Post Modernist thinkers criticise their "deep codes", blue-prints and other master-narratives as too limiting. Post Modernists (sometimes called Post Structuralists) rather completely open up the idea choice through their multi-vocal "heteroglossia"<sup>365</sup> and "deconstructionism" approach which fosters the multiple interpretations and semiotic re-codings of laid-down texts. However, the Post modernist opposition to the structuralist reduction of language and behaviour to binary codes<sup>366</sup> has ended up with a strange slant on subjectivity, for they have discovered no ultimate self-conscious and wilful subject, but rather an infinite regress of wills fading back into subjective space. The Post Modernists have ended up in some ways to a state somewhat similar to the existential emptiness of Sartre and Husserl mentioned earlier.

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<sup>365</sup> See Mikhail Bakhtin (1981).

<sup>366</sup> And what linguistic structuralists call "logical significations".

The linguist George Steiner in his book *After Babel* also takes creativity beyond the Structuralist one of variations on a binary theme. Steiner argues that Structuralism is just one more modern and basically futile bid to create a meta-language and meta-logic that can cross all linguistic, cultural and intellectual boundaries.<sup>367</sup> Steiner, on the other hand, rejects all this as he is influenced by the phenomenologists Husserl and Sartre and the mathematician Gödel. He therefore does not believe there can ever be a precise scientific or logical one-to-one translation from one language to another, as translation always involves interpretation<sup>368</sup>: that is the translator is always subjectively influenced by the ethos of any particular language. One cannot therefore have a detached objective translator, as there is always an element of poetic indeterminacy in the translation. The situation is somewhat akin to what we discovered earlier with relativistic African music, where it is up to the performer to determine which particular rhythmic angle or orientation to take within the overall Beat.

Steiner furthermore rejects any possibility of there ever being a universal meta-language that will bridge all the planets five thousand or so different tongues. He rather believes that these differences are actually vital and creative, as the function of language is not only to communicate and unify but also to conceal, as private languages, dialects, codes, and divergent view-points.<sup>369</sup>

### *Creative Chaos*

The notion that ordered structure is breached by replenishing non-structure has appeared repeatedly in previous chapters. Rhythmic patterns contain unsounded but swinging space, the African cosmic plan emerges out of a formless "void",

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<sup>367</sup> Some twentieth century attempts to create universal symbolic communication systems include the Principia Mathematica of Bertrand Russell and A.N. Whitehead; the Logical Positivist school of philosophy; the young Ludwig Wittgenstein's philosophical book *Tractatus* and the "Oxford Group" that it influenced.

<sup>368</sup> The study of interpretation is known as "hermeneutics".

<sup>369</sup> This, for Steiner, puts quite a different slant on the biblical story of the Tower of Babel, as he sees our polyglot world as a boon rather than a curse on humanity.

African ritual order is punctuated by liminal “anti-structures”. In a like manner and as has been discussed in previous chapters, psychological structures contain the fertile polymorphous unconscious, mathematics contains a continuum that can generate infinite theorems, and the Helmholtz’s harmonic spectrum can produce any number of possible musical scales.

This puzzling idea that spaces, continuums and other forms of non-structure, far from being mere nothing, have the unlimited capacity to create new forms also occurs in the hard sciences. This was discussed earlier in connection with quantum effects and Black Holes. We also touched upon this subject when discussing entropy, the universal tendency towards the evening-out all material distinctions. For as noted, this process of randomisation is ironically the very foundation of the far-from-equilibrium situations that produce the turbulent order and information of “dissipative”, “autopoietic” and other negentropic structures.

This leads us on to the topic of the scientific study of chaos<sup>370</sup> which goes as far back as to the French physicist Henri Poincare well over a century ago. It is based on non-linear rather than Newtonian mechanistic dynamics, and today Chaos Theory has been applied to everything from the perturbations of the planets to the composition of snow-flakes, from planetary ecosystems to the complicated rhythms of the human heart.

Furthermore, since the 1970’s Ruelle, Takens and others have discovered “strange attractors” that straddle the borderline between stable order and turbulent disorder. A simple case of an attractor is a “point attractor” which determines the simple harmonic motion of a swinging pendulum towards and away from a stable equilibrium state: which of course is when the pendulum points straight down. A “strange attractor”, however, has many equilibrium points towards which a turbulent system is drawn. At one end of the scale these follow mathematically determinable laws of exponential multiplication. However at the

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<sup>370</sup> Some easy to read books on the topic include Begley (1983), and Hooper (1983).

other end these multiple branches become infinite, fractal<sup>371</sup> and unpredictable; and because we find it difficult to compute these we call it chaos.

In fact what we have in Chaos Theory is the paradox of a chaos that is also deterministic; i.e. that random or “stochastic” behaviour can occur within the broader deterministic system of “strange attractors”. Chaos theorists are therefore showing us that a system can contain both a high degree of freedom and unpredictability as well as structural and statistical stability. There is, in other words, a balance of freedom and determinism.

Furthermore, these theorists have demonstrated that chaos and its “strange attractors” are actually a higher super-complex type of order from which lower forms like galaxies, whirlpools and human beings emerge.<sup>372</sup> In short, disorder breeds order and form feeds off formlessness.

This idea that what seems random at one level may be well organised at a higher one is demonstrated in the case of “Brownian motion” or the seemingly totally haphazard movements of tiny particles of dust in air or in water. Yet this is actually a result of each mote being simultaneously bombarded in every direction by millions of water or gas molecules. The reason we treat Brownian Motion as aimless chaos is that we simply cannot compute these complex molecular factors. Making calculating even more difficult is the fact that the molecules themselves are composed of subatomic particles, operating within the confusion of Heisenberg’s Uncertainty Principle, Schrödinger’s probabilistic Wave Equations and Super-Strings vibrating in eleven dimensions. As we unwrap one mystery of chaos, we find another inside, and so on ad finitum.

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<sup>371</sup> From the Latin word “fractus” (broken into irregular pieces) and coined by Benoit Mandelbrot to mean infinitely self similar systems, or systems that mirror themselves in endless regress.

<sup>372</sup> Chaos even contributes to brain information-processing, for during the “deep sleep” stage of the sleep-cycle, synchronised brain-waves de-cohere or go chaotic, which creates an unlimited broad-band spectrum of frequencies that temporarily increases the brain’s resonance capacity: freshens up the mind, so to speak.

## *Quantum Consciousness*

The indeterminate nature of quantum events has already been discussed. When the virtual becomes real it does so out of an infinite number of probabilistic patterns. This “actualisation” therefore involves what might be called subatomic “choice”, not such as inappropriately subjective word when the human factor in this process is taken into account: a topic that will be discussed in the next Thematic Chapter on the participatory mode.

However, the Uncertainty Principle may also directly effect human thinking and this was suggested in the early 1960's by the quantum physicist Roger Penrose and neurologist Stuart Hameroff. This “quantum consciousness”, as they call it, occurs within the micro-tubule scaffolding of neurone cells which transmits and processes internal cell information. These micro-tubules therefore provide an intra-cellular mini-computer within the larger computer of the brain. Furthermore, because these hollow tubules are so tiny, electron pulses within them operate at the quantum level. This means that these electrons can also move in an indeterminate way, which therefore creates an infinite number of “virtual” computations. It is the quantum infinities of this micro-wiring that supplies the extra brain-power needed to explain human consciousness and imagination; which Penrose and Hameroff do not think this can just be a product of the large-scale neuronic hand-wiring of the brain and nervous system.<sup>373</sup>

This discovery of Quantum Consciousness would have enthralled the psychologist Carl Jung, if he had still been alive,

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<sup>373</sup> Molecular biologist J. McFadden (2000) believes that the intra-cellular quantum effect in neurone cells is not produced in the micro-tubules but rather at the electrically charged protein voltage gates in the neurone cell walls that regulate the sodium ion pump, which in turn trigger the nerve impulses that create the gross wiring of the brain. Many of these gates are needed to open to initiate a single impulse but there is a critical threshold which can be determined one way or the other by just one voltage gate. As the opening of each gate is determined by a single electron or photon this “decision” to open the gate is, at this critical threshold, quantum and therefore indeterminate. Furthermore, McFadden believes it is at these critical points that consciousness, as an electro-magnetic field, can directly influence the physical brain: for quantum effects can be directly influenced by electro-magnetic radiation.



for in the 1920's he had been intrigued with Heisenberg's Uncertainty Principal. Jung always maintained that at the deepest "chthonic" level of consciousness, where mind meets matter and non-causal synchronicity arises, the quantum effect played a role. Penrose and Hameroff seem to have proven his point.

### *Conclusion*

Accomplished African performers, respected elders and wise sages are able to extract spontaneity, personal freedom and an individual voice from collective rhythms, divine plans and ritual order. They do this by utilising internal swing and through the permutational choice, cross-connections and orientations offered by polysided African arrangements.

All these creative factors help African master artists, chiefs and priests to harmoniously balance improvisation with group collaboration, individual spontaneity with collective constraints, creative dance-solos with ritualised movements, spiritual inspiration with material demands, personal freedom within god-given destiny.

Whereas traditional African symbolism successfully balances freedom and fate, Western Cartesian dualism pits the subjective mind against predetermined matter. Indeed, this extreme view led European classical scientists to treat consciousness as nothing more than a "ghost," a "secretion", an illusion.

During the nineteenth century this materialist and positivistic ethos spilled over of the social and behavioural sciences, for instance the "psychophysics" of the German neurologist Brücke (who influenced the very early Freud) and the "socio-physics" of the pioneer sociologists Auguste Comte and Emile Durkheim<sup>374</sup>.

Naturally there was a strong reaction to all this over-determinism and anti-subjectivism. First came the Romantic arts that despised rationalism, and Hegelian idealist philosophy that

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<sup>374</sup> Nineteenth century psychophysics was a precursor to the twentieth century "behaviourist" theories of Skinner and Pavlov. Similarly, it was positivistic nineteenth century sociology that encouraged the twentieth century "structuralists" Chomsky and Lévi-Strauss to search for deep linguistic grammars and behavioural codes.

rejected gross materialism. In the early twentieth century came Depth Psychology whose focus was inward. Later came Existential/Fulfilment Psychology that explores the ontological freedom (sometimes fearful) of inner emptiness. On the other hands the proponents of Bi-Associationism, Lateral Thinking and Learning Three<sup>375</sup> consider free-will results from the permutational choice of juxtaposing together different mental matrixes.

Even Structuralist admitted the possibilities of binary permutations for freedom of speech, or what they called "constructionism". To this Post-Modernists have more recently added "de-constructionism" and "heteroglossia": the possibility of endless active reinterpretations and multiple readings of laid-down codes and orthodox texts.

Linguistic indeterminism has been discovered by George Steiner, concerning those who interpret poetry, are translators, or use language to analyse itself. As was mentioned in Thematic Chapter Three on hidden space, seemingly impersonal and objective mathematics and symbolic logic has also become indeterminate and open-ended. This occurred when Gödel's Incompleteness Theorem proved there could never be an infallible universal mathematics or final "truth machine". Artificial brains operate on mathematical symbolic logic<sup>376</sup>, but because of Gödel's Theorem computer electronic hardware can never give all the answers. It all depends on the choice of software fed into it by the programmer. In short the subjective factor or programmer is an intrinsic apart of the cybernetic formula.

Just as the creative swing of African music always allows room for another rhythm, another dance-step, another individual interpretation, so in the hard-sciences freewill has surfaced in many different guises. One is quantum "uncertainty" that may provide an important non-deterministic component to consciousness. On the thermo-dynamic side there exists a higher

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<sup>375</sup> Namely Arthur Koestler, Edward de Bono and Gregory Bateson.

<sup>376</sup> This was converted into computer language in the 1930's by Alan Turing and subsequently first put into practical use in the enormous old-fashioned vacuum tube operated computers of the 1940's by John von Neumann (see Bolter 1986).

form of “creative chaos” in open-ended turbulent/dissipative systems whose non-linear dynamics go beyond the determinist laws of Newton and which produce everything from heavenly bodies to human beings. Moreover, chaos theory, with its “inventive” fractals and “strange attractors” demonstrates the possibility of freedom and unpredictability co-existing within fixed structures.

All these non-deterministic linguistic, quantum, mathematical and thermo-dynamic factors help explain why it is possible to have free-speech within grammatical rules, free thinking in gross matter, free movement within deterministic parameters.

Finally and as will be more fully discussed in the next theme on the participatory mode, the personal and subjective, once thought quite removed from the hard sciences, has crept back during the twentieth century as the “observer effect” of atomic physics.

## THEMATIC CHAPTER NINE: THE PARTICIPATORY MODE

The traditional African performing arts involves everyone directly around, whether young or old, master or novice, musician or dancer, cantor or chorus. Furthermore, they all meet face-to-face within an open dance space, a circle, a "theatre in the round" surrounded by a swaying, clapping and fully participating audience. As noted in Chapter Two this emphasis on direct participation is also found in the religious, socio-political and economic areas of traditional African societies that are communalistic "gemeinschaft" ones based on kinship solidarity, personal ties and informal "primary relations". At a more metaphysical level human society, nature, the ancestors and spiritual forces are all considered to be part of the same sacred community.

This is in contrast to Western societies that are typified in the performing arts by passive spectators and a stage that separates the audience from artists. On the broader scale there is social division-of-labour, an emphasis on impersonal bureaucratic "secondary" relationships, and industries that dominate and destroy nature. This non-participatory mode is also a cornerstone of the Western scientific approach that separates the experimenter from the experiment, splits the mind from the material and traps a subjective ghost in a deterministic machine.

Nevertheless and as will be discussed first in this chapter, many areas of the social and behavioural sciences are rediscovering the participating subject. Some social scientists have moved away from just discovering generalised social laws and are looking at how people actively construct established social norms: indeed "participant observation" has become one of its key research methods. On the other hand some branches of psychology have moved away from intense introspective therapies to those that involve the broader social context, or as social-psychology look at how behaviour is related to the over-all cultural milieu.

We then turn to ecology that is demonstrating the symbiotic connections between humanity and the natural environment, putting it closer to the reverence for nature found in African and other traditional societies.

The hard sciences are also not immune from these participatory ideas, and we close this chapter on new physics which has demonstrated that the old mechanistic dogma of the classical sciences of there having to be a dispassionate and detached researcher is a fallacy: at least at the subatomic level. Classical science gave us immutable atoms but, ironically, today it is the very scientists who cracked the atom, who now speak of the “observer effect” that influences the outcome of their experiments.

### ***Participation: Social and Psychological***

Back in Enlightenment times the notions of humanity being a central and integral part of the universe was questioned. The older notions of mankind being a microcosm within a larger astrological macrocosm was denounced as mystical and superstitious mumbo-jumbo: as was the alchemical belief in “as above so below”. Classical science suggested rather that humanity existed in an uncaring physical world that had to be conquered through rational action: the subjugation of nature, the conquest of the seas and the exploitation of mineral resources. Moreover, because these classical scientists renounced subjectivism they thought themselves as being the neutral observers of objective experiments, the unbiased results of which therefore could provide universal truths, irrespective of any particular person; or indeed culture or time epoch.

However and as has already been discussed, there is an inescapable subjectivity in both mathematics and linguistics. Mathematics is not universal but is rather incomplete with each mathematical system being tailor-made by individuals to give precise answers to specific situations. In similar vein there is no universal meta-language; as languages are also used to create private spaces and linguistic translation is “indeterminate” and dependent on the particular interpreter.

The idea of a subjective side of objective research in the social sciences arose due to the influence of phenomenologist philosophy and hermeneutics. These dwell on the individual construction of psychosocial categories and insists on subjective immersion into discourses to fully understand and interpret them. It was these ideas that led the nineteenth German sociologist Max Weber to develop his deep understanding or “*verstehen*” approach to social research in contrast to Comte and Durkheim who attempted to focus on concrete positivist social laws and facts.

Anthropologists were influenced by all these ideas and from the 1930's came to realise the impossibility of analysing social phenomenon from a solely objective point of view. As a result these social scientists began been subjectively immersing themselves in both the language and culture under scrutiny in a field-research technique known as “participant observation”.

A more recent sociological school that uses the subjective approach is ethno-methodology that specifically focuses down to the micro-sociology of an individual's role in creating of social reality. Ethno-methodologists are influenced by the phenomenological notion psychosocial categories being generated from the pre-reflexive consciousness. They therefore peer behind the categories, representations and norms of everyday social life in order to examine how people actually construct, confirm and continually modify them.

Whereas participant observation and ethno-methodology are interested in the subjective aspect of the social, another relatively new branch of the social sciences called “social-psychology” looks at things the other way round: that is how the socio-cultural context influences individual behaviour. For instance the German Max Weber considered that the inner-directedness, regimented behaviour and deferred gratification of many Europeans and Anglo-Americans was a result of the prevailing ethos of the Protestant work-ethic. However, in many non-industrial and developing nations this ethos hardly applies; which is why some old-time colonialists, zealous Western missionaries and present-day business investors often accuse the

populations of these countries of being too gregarious, happy-go-lucky and unconcerned with working for the future.

Freud's theories of sexuality were, like Weber's, primarily based on findings from Westerners: namely middle-class, patriarchal Austrians. However, Margaret Mead's pioneering research on the Trobriand Islanders of the Pacific demonstrated that Freud's theory of the infantile Oedipus Complex (a child's fixation on its mother and envy of the father) does not occur in matrilineal societies, where the authority over the child is in the hands of the mother's brother and not her husband. Another comparative example is that rugged individualism that is so much admired in the West<sup>377</sup> is sometimes interpreted in Africa to be a form of witchcraft<sup>378</sup>, for as mentioned in Chapter Two, many traditional communalistic African societies believe that any form of excessive power and wealth stems from sorcery and evil "juju".

Indeed, the influence of social surroundings on personality have become such a well-established tenet that during the 1970's it became the cornerstone of an American school of psychology called Environmental Psychology<sup>379</sup>. Proponents of this school stressed that limited laboratory studies of human beings cannot be generalised into the real world setting of family, community and culture, with their ever-changing problems. Their ideas lead on to theories that place the burden of responsibility for psychopathology as much on the society as the individual. If society is sick then its individual members, indeed whole families will be sick, and there will be a consequent increase in crime, suicides and mental disease.

The psychologist Ronald Laing is one of those who has put forward the claim that neurosis is a family problem rather than

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<sup>377</sup> For a book on the development of individualism in the West see C.B. MacPherson (1962).

<sup>378</sup> The social psychologist Margaret Field (1960), who as mentioned in Chapter Two worked in Ghana, showed that contemporary witchcraft accusations are not just a hang-over of "primitive" fears and irrational jealousy, but also involve a response, albeit neurotic, to a rapidly changing socio-economic situation: the importation of the laissez-faire economy, fast-lanes and cash elites. Ironically, these resulting witchcraft accusations have increased with modernisation.

<sup>379</sup> Pioneered by M. Cole, L. Hood and U. Bronfenbrenner.

an individual one.<sup>380</sup> According to Laing it is pathological families that conspire, often unconsciously, to nominate one of their members as a scapegoat. The victim then uses the neurosis to creatively escape from the impossible double-bind of being torn between one's love of family and self-protection. For Laing, the task of the psychologist is rather to lead the neurotic out of this cul-de-sac whilst, at the same time, curing the whole family. Simply locking neurotics up in a mental asylums, or tranquillising them, denies their creativity, as they then become institutionalised into the pre-established hierarchy of passive patient and superior doctor. It was because Laing refused to take on this authoritarian role that he called himself an "anti-psychiatrist". A contemporary of Laing, Thomas Szasz, went even further by suggesting that psychiatric illness was largely an ideology or myth created by the medical profession.<sup>381</sup>

### *The Ecosystem and Co-evolution*

Many biologists have been returning to the older holistic ideas of the inescapable reciprocity between humanity and natural environment. One example is ethology that gleans information on human conduct from studies on animals in the wild. Ethologists such as Jane Goodall, Konrad Lorenz and Robert Ardrey<sup>382</sup> actually spent time with free-ranging animal communities rather than just watching them through the bars of cages. And their studies of animals show that many aspects of human nature are related to animal behaviour: for instance grooming and nurturing patterns, male aggressiveness, social dominance patterns, territoriality and body language. These findings are, incidentally, relevant to the nurture-nature debate, as ethology bridges the gap between those who claim that a person's genetic and biological background is the sole basis of personality and those who believe it is socially determined.

Another biological example of the new scientific trend to emphasise mankind's closeness with nature comes from ecology.

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<sup>380</sup> See Laing (1965 and 1967).

<sup>381</sup> His book is called *The Myth of Mental Sickness* (See Grof 1985).

<sup>382</sup> For Lorenz see 1966 and Ardrey (1967). Goodall's work was on gorillas.



Pioneer ecologists such as Ludwig von Bertalanffy and Gregory Bateson noted many years ago that all surviving animal species must have had some kind of positive relationship with their local environments, otherwise they would have been extinct through population explosion and habitat spoilation. Sadly, in the twenty-first century this contention has become familiar enough with concerns over humanities obvious self-destructive pollution of the earth's eco-system.

This topic of eco-systems lead on to the previously mentioned<sup>383</sup> astrophysicist-cum-biologist, Erich Jantsch, who links dissipative/autopoietic "steady-state" concepts with ecological theories. He believes that feedback cycles not only provide individual living (i.e. autopoietic) creatures with internal "homeostasis", but that feedback also plays a dynamic role in the overall evolution of the earth's species. He calls this developing global feedback system "co-evolution" which counteracts the Darwinian notion of the "survival of the fittest" as it views evolution as basically a co-operative or synergetic venture. This mutual collaboration or symbiosis between organic creatures is now known to have begun over two thousand million years ago. At that time there was no protective ozone layer and so primitive bacteria utilised the strong ultra-violet radiation of the sun to obtain energy and create the earth's first atmosphere rich in carbon dioxide. This in turn paved the way for chlorophyll containing plants whose oxygen by-product led to oxygen-metabolising animals and the protective ozone layer. And as every school-child is taught, the ecological balance between oxygen and carbon-dioxide gases is maintained and recycled by the earth's biosphere mantle of green plants and animals.<sup>384</sup>

James Lovelock gave a poetic name to the global biosphere, which he called "Gaia" after the ancient Greek earth-mother deity. Furthermore, in his "Gaia hypothesis" he suggests that there could be a gradual unification of mankind and biosphere

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<sup>383</sup> It was mentioned earlier in this chapter he sees the collaboration between left and right brain modes as a "mind eco-system".

<sup>384</sup> There are of course so many other evolutionary symbiotic feedback relationships in nature; for instance between herbivores and carnivores.

into a single planetary consciousness: or “noosphere” as the Jesuit archaeologist Teilhard de Chardin called it. In some ways the ecological “whole earth movement”, the shrinking “global village” and the electronic “world-wide web” can be seen as components of this process. Reinforcing this contemporary image of planetary unity are deep-space photographs of earth.

Before concluding the discussion on ecosystems and I should point out that these global participatory ideas have been expressed musically by some Europeans throughout the ages. There was the “harmony of the celestial spheres” of antiquity and the interlocking polyphony of medieval Europe that reflected the paternalistic Catholic communal ideal of “Christendom” where mankind and other living things were locked into divinely ordered place. In the nineteenth century there were the Romantic’s who composed poems and rhapsodies to nature. More recently has come the neo-romantic Western craze for earthy, ethnic “World Music”: what Mickey Hart of the Grateful Dead rock-band calls “Planet Drum”.

Not only have the biological sciences shown that mankind is an inseparable part of nature, but also as will be discussed below, it has also shown that the human mind is inseparable from the material world.

### ***The Observer Effect in the Atomic Dance***

Whereas classical science clearly distinguishes the experimental mind from the experimental object, atomic physics rather suggests that there is a constant dialogue going on between mind and matter, albeit atomic matter. The classical scientific view of there having to be a separation between the observer and observed, the experimenter and experiment, was first questioned back in the 1920’s by findings from both major wings of atomic quantum physics: the wave approach of Schrödinger and the particle approach of Heisenberg, which deal with the “virtual” states that subatomic particles exist in below Planck’s Constant. Let us examine these both in turn, starting with Schrödinger.

We have previously seen that Schrödinger’s Wave Functions are abstract equations which deal with subatomic probabilities.

However, when an experiment is carried out only one of the probabilities is actualised. So it seems that it is the very act of measurement that reduces multiple wave-function possibilities down to one specific experimental result. But if this is the case, then what is the real state of subatomic affairs in the experimental apparatus before measurement occurred? Is it in a state of suspended animation? Moreover, when exactly does the act of measurement occur?

For example, the result of an experiment in quantum physics may be put into a sealed envelope and opened a week later, by which time the apparatus could have been dismantled. So how can things still be in a state of suspended animation? This is known as “Schrödinger’s Paradox” and can be extended beyond the laboratory to any situation involving observers and observed.

In recent years this puzzle has been tackled in two ways. The first was Hugh Everett’s “many worlds” suggestion of there being trillions of universes branching out from ours. Each of these parallel universes emerges from just one wave function collapse. If it happens to collapse in our particular world it creates our particular universe. If it collapses in a different way, however, it then creates alternative universes from all the other possibilities that did not materialise into our own. In this many worlds scenario not only material universes but also our minds branch out, as in this universe we do this and in another that and so on ad infinitum. Thus for Everett there is no such thing as freewill but only an infinity of split minds populating a multiplicity of possible universes.<sup>385</sup>

Eugene Wigner has a less schizophrenic way of solving Schrödinger’s Paradox. He believes that consciousness itself is the mechanism which collapses or “de-coheres” potential Wave Functions. This implies human free choice and that future states cannot simply be the pre-existing possible many worlds of Everett. At the same time Wigner’s idea adds yet another basic asymmetry to the cosmos in addition to those of entropy,

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<sup>385</sup> See B. Dewitt and N. Graham (1973).

metastable hydrogen and handedness already referred to. This is the wilful impact of the human observer on subatomic processes.

A much earlier quantum physics example of an “observer effect” is a result Werner Heisenberg’s famous Uncertainty Principle. The effect in this case arises because the indeterminate ways atomic particles quantum-jump makes it impossible to ever simultaneously know both their position and speed. By knowing one factor, the experimenter automatically alters and effects the other. The reason for this subatomic imprecision becomes clearer when Niels Bohr’s theory of Complementarity is taken into account, for if particles are also wavelike then they are smeared-out both in space (i.e. the size of the wave) and in time (i.e. its frequency). It is therefore no more possible to pinpoint an atomic “wavicle” than it is to hold a sea-wave or freeze the note of a musical instrument.

This inability to immobilise atomic matter is not, moreover, something which can be overcome by more accurate and refined experimental equipment. It is intrinsic to the oscillating and uncertain nature of subatomic reality itself. The impossibility of these “observer effects” ever letting us get to the rock bottom of atomic events has been called the “bootstrap effect”<sup>386</sup> by the American physicist Geoffrey Chew. He alleges that the ever increasing number of “fundamental” particles, wavicles or whatever, being discovered through ever more powerful cyclotron and megatron “atom-smashers” is simply the result of researchers splintering atoms into ever tinier smithereens. Inevitably the atomic scientists end up looking at their own splintered images: the bigger the atom-smasher the smaller the shard.

If, as Einsteinian theorists argue, the physical world is rooted in a continuum of anything between four to eleven dimensions this scientific self-reflection is not hard to understand. The scientific community is simply dividing up a continuum in the way they see it, in much the same whole cultures arbitrarily

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<sup>386</sup> Pulling up ones own “bootstrap” in the sense that one is pulling up or out a theory which is already part of oneself and not something outside, prior to or fundamental to oneself.

divide the continuous visual and sound spectrums into discrete colours and tones.

So for many of today's physicists there is also no terra firma, for they are only discovering ever tinier or more intricate patterns of reality; any particular one being a product of their specific experiment or theoretical input. So physicists (like mathematicians or linguists) have recognised that the observer and observed are one and the same thing. Impersonal researchers are simply studying themselves, or rather their own reflection, in matter. So we end up with the enigma of one part of the universe reflecting on itself in endless regress. Whether they like it or not scientists have discovered that they are all involved in the cosmic dance.

### *Conclusion*

It was once thought that there is, or should be, a strict demarcation between the observer and observed; a conviction that became stronger with the invention of the telescope and microscope that widened the gulf between humanity and the macro- and microcosmos. But instead of making mankind more peripheral many areas of modern science are rather suggesting that we are still central participants in an only seemingly remote and objective world. One example mentioned in the earlier Thematic Chapter on holism is David Bohm's holographic universe. This model suggests that each minute portion of the universe, including ourselves, encode its entirety: a notion remarkably similar to the macrosocsm within the microcosm of ancient alchemy and astrology.

Other areas of the hard science also acknowledge the participatory idea that the experimenter is inseparable from the experiment and intrinsic to the experimental equation. This subjective conclusion is found in Einstein's relativity theories which stress the importance of the particular frame-of-reference of the researcher/observer. Also mentioned in earlier chapters is that there is also a subjective consequence of the mathematical "incompleteness", as it ultimately is the mathematician who chooses for any particular job which mathematical system to use.

As noted in this chapter the participatory mode is also found in particle physics as “bootstrap theories” in which atomic scientists create the very fundamentals they are analysing. One type of “bootstrap” is the observer’s effect on the position and speed of a subatomic resulting from Heisenberg’s uncertainty principle. Another is the recognition that neutral experimenters themselves “actualise” one particular state of atomic being from the infinite virtual probabilities of Schrödinger’s Wave Function collapse.

We also dealt here with participatory ideas stemming from some of the modern biological, social and behavioural sciences. Ecological research has culminated in planetary concepts of sharing and symbiosis such as Co-Evolution and the Gaia Hypothesis. Furthermore, it is ecologists who were some of the first to point out that the Western industrial mode of dominating rather than respecting nature is leading us to global environmental disasters such as green-house effects, ozone depletion, depleting fish-stocks and so forth.

Recent trends in the social sciences are also showing that the individual/psychological on the one hand, and the collective/social on the other, are not as opposed as previously thought: as evidenced by the emergence of social-psychology.<sup>387</sup> Then there is the phenomenological, “verstehen” approach of the social sciences that utilises “participant observation” and focuses on how people internally construct social reality. Conversely, psychology has moved away from intense introspectionism to Environmental Psychology and “anti-psychiatry” that extends therapy to a broader society.

It now seems that many advanced areas of the science are coming to the participatory conclusion that it is impossible to be isolated and neutral spectators as, whether we like it or not, we are all are involved with the surrounding social, natural and physical world. The experimenter effects the experiment and a subjective ghost animates the machine. Humans are an inescapable ecological part of nature and personal psychosis is a family and community affair. It is the participating sociologist

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<sup>387</sup> Pioneered in the 1930’s by Margaret Mead and Bronislaw Malinowski.

who most deeply observes society, whilst micro-sociologists have highlighted the individual's contribution to the norms of everyday social life.

These new scientific participatory conclusions are disclosing to us what many traditional African and pre-industrial cultures have intuitively and artistically long known. How can there be outside spectators when there is no separation between the individual and the ritual community, between mankind and mother nature, between the earthly microcosmos and the heavenly macrocosmos.

This old participatory wisdom was sometimes expressed and hinted at through performance. Indeed, raised performance stages<sup>388</sup> that seal in artists and seal out audiences were unknown in pre-industrial societies. Rather performance areas were open spaces, circles and semi-circles<sup>389</sup> that invite active audience involvement. Then there are the twirling dances of traditional Africa and ancient antiquity that mimic the harmony of the heavens, and totemic animal dances and masquerades that pay homage to the animal kingdom. Above all Africa has its polyphonic dance-music that draws everyone onto the performance floor and into the social event, the sacred drama, the historical pageant, the communion of the Beat.

These old musical and metaphysical intuitions about an individual's inevitable involvement in the community, in nature and in the cosmos are now back with us in new scientific form. No one in the modern world is really a mere spectator or passive onlooker. Dispassionate scientists cannot totally isolate themselves from their experiments. Laser research has led us to holographic "togetherness". Psychologists are telling us that the social setting matters. Sociologists are subjectively "tuning in". Ecologists are letting us know the symbiotic harmony of "planet drum", whilst quantum physicists discover that we are all part of the atomic dance.

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<sup>388</sup> So-called "picture-frame" stage with its "proscenium" arch.

<sup>389</sup> As in the ancient Greek semi-circular "amphitheatre" around which audiences could sit on three sides and thus be closer to the action.

## CODA

Twentieth century scientists have split the atom, discovered ecological cycles, invented holograms, explored space and generally relativised matters. Nevertheless, the overall ethos of our present age is still largely the mechanistic one of eighteenth and nineteenth century Europe, with its notions of linear time, single-minded materialism, regimentation, and avowed aim of conquering mother nature. This all resulted from Europe being the first to industrialise, but it is now having a disastrous consequence on our ability to cope in the post-industrial "information" age.

Whereas twenty-first century scientists are operating at higher dimensions and using interdisciplinary methods, society still churns out boxed-in and blinkered "one dimensional" specialists, to quote the German philosopher Herbert Marcuse<sup>390</sup>. Furthermore, after the Second World War, Marcuse, Theodore Roszak<sup>391</sup> and other social commentators talked of the emerging consumerism in which the unnecessary business-manipulated desires of people are satisfied with junk food and "plastic" reality. Today television sit-coms and soaps also offer us fake families whilst computers offer us virtual reality. But computers also create unemployment, and as everyone knows television "sucks".<sup>392</sup>

Although astrophysics has expanded our outer reaches, we have developed an agoraphobic dread of openness and a consequent compulsion to fill in, fill up or generally conquer every available space. So star wars and space invaders reign. Whilst the electronic web gives us the "global village"

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<sup>390</sup> His famous book (1964) on the topic is *One Dimensional Man: Studies in Ideology of Advanced Industrial Societies*.

<sup>391</sup> See for instance Roszak's critique of industrialism in his book *Where the Wasteland Ends* (1972).

<sup>392</sup> One of the reasons that television has this hypnotic effect is that the flickering screen triggers off peripheral retinal nerves that are only sensitive to fast movement. This peripheral vision had the evolutionary function of warning us "out of the corner of the eye" that danger was coming: now turned by television into a subliminal hook.



informational speed, it is accompanied by “copy-cat” violence and “future shock”. And though the agricultural sciences have provided us with beef and butter mountains, the developing nations go hungry and their farmers are undermined by giant agrochemical industries.

The eighteenth and nineteenth century industrial revolution not only created tensions between man and machine for our “modern times”<sup>393</sup> but also produced an intensely polarised theatrical mode. This is “melodrama” with its stark confrontation between perfect “goodies” and ultra “baddies”: from the heroes and villains of Victorian playhouses to the cowboys-and-indians and cops-and-robbers of Hollywood. Gone are the flawed heroes of old “tragicomedy”<sup>394</sup> in which the principle characters wrestle internally with their own good and evil. Melodrama rather externalises and projects evil onto the gangster, crook or enemy – which justifies the heroic “macho-man” in his butchery. A suitable entertainment for a civilisation that exterminated the so-called “savage heathen”, overthrew the “red menace”, kept at bay the “yellow peril”, is crusading against Arab “extremists” and always busy looking for a new terrorist or satanic foe to slay. Continually looking for evil in others rather than trying to combat the evil within itself.

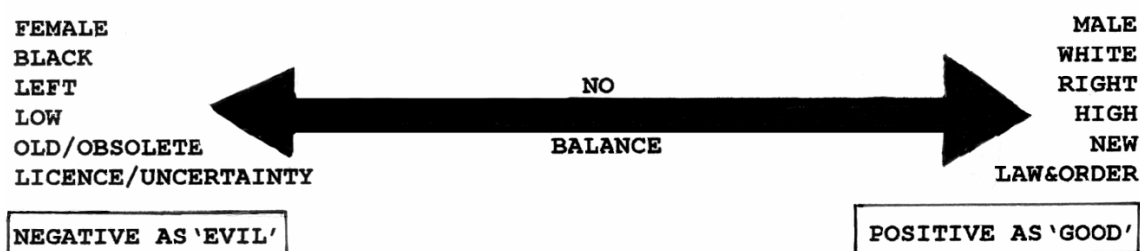
Besides the industrial Faustian<sup>395</sup> battle between man and machine and the melodramatic one between good and evil there are also whole host of other antagonisms in our modern “Babylon”: between old and new, black and white, North and South, town and country, left and right, East and West, masculine and feminine, law and license. This disharmony is depicted in the following Figure.

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<sup>393</sup> The title of a famous Charlie Chaplin movie in which he portrays a tiny human cog in the wheel of a mighty industrial factory.

<sup>394</sup> This form of theatre began with ancient Greek Theatre and is found in early opera and the Shakespearean drama of the sixteenth century.

<sup>395</sup> Goethe’s Faust sold his soul to the devil in order to acquire the knowledge to control the material world.



*Figure 58: Industrial disharmony (linear polarisation)*

There are two particularly dire consequences that arise from our present “disharmonious” epoch being stuck in the industrial ethos and melodramatic “time-warp” of the nineteenth century West.

Firstly, the mentality of most politicians, who are so quick to use the fruits of modern science for their own schismatic, greedy and authoritarian purposes, are years behind the frontiers of knowledge from which these new discoveries come. Which is why so many world leaders prefer nuclear power to decentralised solar power; Star Wars and spy satellites to peaceful space research; computer surveillance to open cyberspace; mass destruction to mass communication. In short a balance of terror rather than an equitable world,

Once-upon-a-time leaders, kings and prophets had to sacrifice themselves for the people, but now power-drunk politicians are preparing to sacrifice humanity from the safety of their underground bunkers in cold wars, hot wars, asymmetrical wars and global war; all necessitating a grotesque and demonic armaments industry. Indeed, warfare, instead of being an occasional and anomalous state of affairs has become normality: in fact big business. So in spite of the eighteenth century ideal that the Western nation-state would control the primitive savagery of earlier epochs, the limited and ritualised wars of olden times have been replaced by endless all-out modern wars which largely end up targeting civilian. Who then is the savage?

Besides modern warfare there is a second catastrophic consequence of the world powers being stuck in the old industrial consciousness. This is that the aim of subjugating nature in what is now a shrinking world has almost led us to the

point of totally consuming and polluting the earth. Not so surprising when one recalls that the patriarchal ethos of the industrial revolution led to a general contempt for the feminine; which included the exploitation and "rape" of mother nature. This is why today we have ended up with radiation leaks, ozone breakdowns, acid rain, greenhouse effects, rising sea-levels, deforestation, famine, and "mad-cow" and other man-made "iatrogenic"<sup>396</sup> diseases.

Adding to industrial Europe's contempt for mother nature was its focus on the "progress" of sickle-bearing father time. Today, we are reaping the "benefits" of this, for if things simply move in straight forward lines there need be no recycling or reincarnating. Rather it has become every generation for itself with little thought of generations to come. Which is why the present one believes in planned obsolescence, "pigging-out" on fast-foods and selfishly over-consuming the earth's fossil fuels. Indeed, hardly any politician looks longer than ten years into the future, usually no longer than his or her term of office. It is hard to imagine our so-called "advanced" civilisation contemplating a festival for the thirty-fifth century AD; which is exactly sort of thing the ancient Egyptians were doing in their Sothic celebrations held every 1460 years.

It is also ironic that at the very time when astronomers and biologists have discovered that life on earth goes back two thousand million years, modern leaders, with their nineteenth century hubris and twenty-first century technology, are ready to spoil the planet in a mere astronomical moment.

Fortunately there are movements in the contemporary world that are helping develop the long-term global awareness needed to prevent this inhuman "progress" and cataclysmic "advances". One holistic and non-determinist trend comes from within Western science itself. This stretches from the Spinoza's pantheistic quarrel with the dualistic Descartes during the eighteenth century, to the "vitalism" of Henry Bergson in the nineteenth century, and right up to the present anti-

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<sup>396</sup> This means diseases inadvertently created by the medical profession, such as virulent infectious germs that sometimes develop in hospitals.

mechanistic, humanistic and ecological discoveries in science and philosophy discussed in this book.

Within the European art tradition there are also holistic trends that are healing divisions and injecting pluralism and freedom into one-sided materialism. The nineteenth-century Romantic Movement evened up scientific discoveries by rediscovering the old, the personal, the transcendental and the irrational. This was followed by the "primitivism" of twentieth century "modern art" which depicts reality from multiple, ambiguous or surreal perspectives

More recently has come the "pop art" of Andy Warhol and others that attempted to dissolve the barriers between art and commerce. The theatrical world, on the other hand, has in recent years been breaking down the boundary between actors and onlookers: by either putting the audience into the plays (i.e. audience participation) or putting the players amongst the audience (street-drama, "invisible" theatre and "happenings"). At the same time there had been a shift in the elitist, masculine and Eurocentric orientation of literature, with the proliferation of working-class, Third World and feminist writings. Even state-of-art information technology is helping shatter old barriers between artists, audiences and art producers: through instant electronic artistic communication and cultural cross-fertilisation, and though decentralised forms of production and dissemination based on CD burners, MP3 files and the World-Wide Web.

Yet another aid that is helping the modern world break out of its hierarchical and mechanistic straightjacket is the back to roots movement; which includes a growing interest in ancient and Eastern philosophies, arts and religions. The balanced nature of these pre- or non-industrial ideas is illustrated below and can be compared with previous Figure of industrial disharmony.

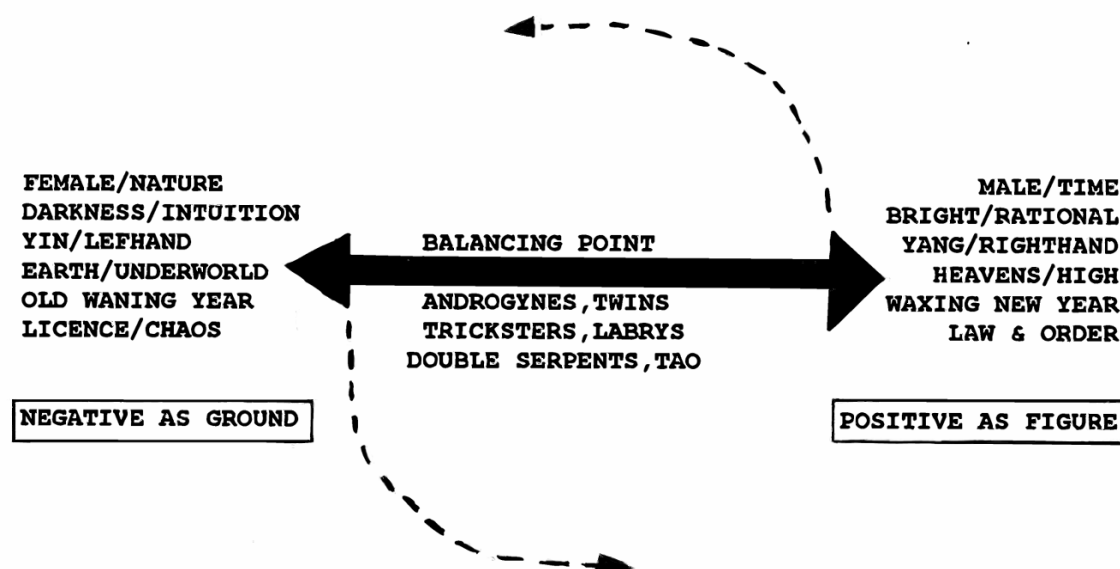


Figure 59: Ancient non-industrial harmony (cyclical bi-polar balance)

As has been a major point in this book, African and African-derived music is also putting harmony into the modern epoch: and here I would like to list seven reasons.

Firstly: it has encoded within it a holistic roots wisdom concerning the balancing of body and soul, discipline and spontaneity, determinism and free-will: all so much needed to counteract the schizophrenic mind versus body legacy that Descartes left us.

Secondly: just as the nineteenth century Romantics enriched themselves artistically by recycling their own folk past, so the contemporary world is being vitalised by the folk traditions of the Third World: particularly those of Africa and its Black Diaspora. Indeed, the current World Music fashion was ignited by African dance-music in the early 1980's.<sup>397</sup>

Thirdly: so-called "primitive" African music actually contains highly sophisticated symbolic knowledge that, as discussed at length in this book, is relevant to our post-modern scientific age

<sup>397</sup> It began under the name "Afro pop" when a number of independent European and later American record labels began to market the music of African stars/groups such as Sonny Ade, Fela Anikulapo-Kuti, Franco, the Bhundu Boys, the Drums of Burundi, the Konte Family, etc. Then for marketing purposes the name was changed to "world music" in 1987.

Fourthly: polyrhythmic African music is captivating many international art, jazz and fusion musicians who are experimenting with various electronically looped, multi-tracked and "techno" styles. For multi-tracking recording techniques fit perfectly with African and other polyphonic styles, drum-machine skills are enhanced by African drum wizardry, and phased tape-loops are primitive electronic versions of the percussive cycles found within the African Beat.

Fifthly: African and Black Diaspora music is fundamentally a dance groove which, unlike Western art music, involves both active audiences as well as performers. There are no inert audiences as with Western staged events. The African participatory mode is something sorely needed in a contemporary world that encourages, passive consumers and television voyeurism at its best, and excluded minorities and rejected refugees at its worst.

Sixthly: unlike cerebral Western art music, African and African-derived music involves the thinking head and the moving feet, cool concentration and body sweat. The funk, footwork and earthiness of black dance-music therefore makes it the perfect form of music therapy in our "space" age; for the further we go into outer space the more we will need a stabilising down-to-earth music. An artistic "keel" so to speak.

Seventhly: black music with its masquerades, riotous road-shows, fancy-dress parades and Mardi Gras, is helping bring street-carnival back to the Western world. Black carnival now periodically re-claims the city streets as a social space for people to communicate<sup>398</sup> and also provides a liminal saturnalia-type festival for the public to blow-off cathartic steam. For instance, and despite of initial police objections,<sup>399</sup> the West Indian

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<sup>398</sup> In big cities the streets are for transport not for socialising. Indeed if one hangs around the streets of London trying to chat with people one can be arrested for harassment and "loitering with intent".

<sup>399</sup> I myself in the mid 1970's saw a group of British police repeatedly attack carnival spectators watching a reggae band playing at a cross road. I was sitting with the band on a raised platform so could see the event clearly. Several times the police charged the edge of the crowd attempting to ignite a panic and create casualties which would justify the banning of the street celebration. They failed due to the good nature and peacefulness of the crowd which absorbed and dissipated the ripples of panic. Within a few years after this disgraceful incident

Notting Hill Carnival held in London is now the most important annual street-carnival in Britain and attracts over one million black and white revellers and sightseers.

All these factors have combined to make black and African dance-music the global lingua franca of the twenty-first century that bridges the gap between black and white, sacred and secular, male and female, old and new, art and science. It first became popular during the early twentieth century that was still fully in the industrial age, it went global in the post-industrial era that followed, and it looks set to become inter-planetary this Millennium.

If the reader should think it odd that the beliefs of an ex-slave and ex-colonised people should have taken such hold in a dominating (i.e. Western) civilisation, it should be remembered that there is a historical parallel. This happened almost two millennia ago when the beliefs, albeit mystical rather than musical, of another exploited people conquered a world empire. These were the Christian beliefs of the imported slaves and colonised Jews of ancient Rome. Like early Christianity, black music is a product of a people whose future was taken away from them; so both had no alternative but to create bliss right in the "here and now": whether through the soul, body music and communion of black dance, or the Holy Spirit, Agape (love feasts) and Holy Communion of Christianity.

In both cases it was the creativity of the oppressed, rather than the might of the oppressor, that provided the inspiration and holistic paradigms for a new era. It was the early pre-institutional Christian fellowship, with its fish sign of the then New Age of Pisces that transmuted declining Imperial Rome into the Holy Roman Empire. In our present epoch it is black music that is helping us enter the new Age of Aquarius, during which the antagonistic divisions and dualisms that have multiplied at the tail-end of the Piscean Age will have to be reintegrated if we are to survive.

Institutional Christianity, especially in its more official and dogmatic form, has not been able to bring this about; for over

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some policemen themselves were dancing to the calypsos, reggaes and African drumming of carnival.

the centuries much of it has become associated with religious oppression, the crusades, the persecution of pagans and heretics, the subjugation of women and as an accessory to the African slave-trade, colonialism and cultural imperialism.<sup>400</sup> Moreover, Christianity denigrated the physical and earthly as sinful, which is why it banned dance from worship after it became official Roman religion in the fourth century AD. It was also this lopsided other-worldliness that led the church establishment to first persecute science, then ignore it, and finally be ignored by it. Which is why for so for many people in our scientific age institutional Christianity is unable to provide a way out of the materialist dead-end that we now find ourselves.

In fact there can be no single answer to this problem, as re-synthesis in a relativistic age has to come from many sources: science, the arts, philosophy and history. Then there are the environmental and peace movements with their modern mandalas of the earthly globe and the circular anti-war "lollipop" sign. Religions old and new are also needed, including Christian explorations into communalism, syncretism, existentialism, Liberation Theology, a female priesthood and the Ecumenical Movement. An African contribution to this Christian renewal is the recent re-introduction of full dance back into church worship after a gap of fifteen hundred years.

To these re-integrative trends we must add the roots music of Africa and its Black Diaspora that are helping connect and co-ordinate the artistic hands, the scientific head, the spiritual heart and the earthly feet in a harmony that will be crucial for this new Millennium.

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<sup>400</sup> A thoughtful book on the growth of modern racism in Europe is Martin Bernal's 1987 book *Black Athena*.



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Since the turn of the century the world has been swept by a succession of Black American dance beats, from Ragtime to Rap – followed in recent years by the popular “world” music of Africa itself. This book examines why all this Black “roots” and ethnic music has become the dominant sound of our global age.

The book’s first section, deals with the symbolic knowledge of Sub-Saharan Africa embedded in its music and traditional world-views. Its second section examines how some areas of recent scientific research have moved away from the mechanistic and deterministic ethos of industrialism towards relativistic, holistic, circular, and participatory ideas that are, surprisingly, in tune with the old African symbols discussed in the first section.

In short, the old insights and musical wisdom of Africa and its Diaspora are helping provide the contemporary age with the means of harmonizing our heads and feet, mind and matter, inner and outer and generally putting breathing-space, play and “swing” into a materialist world.



John Collins has been active in the Ghanaian/West African music scene since 1969 as a guitarist, band leader, music union activist, journalist and writer. He obtained his B.A. degree in sociology/archaeology from the University of Ghana in 1972 and his PhD in Ethnomusicology from SUNY Buffalo in 1994. He began teaching at the Music Department of the University of Ghana in 1995, obtained a Full

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