

in each individual) and reductionism (any relationship is analyzed in terms of its constituent substances: *Substantierungsdenkeri*). In European languages I (*ich, je, io, ego, iy**>) remains the same / regardless of the person whom I address myself to and of the situation where I am located. This unchangeable use of the first person pronoun in daily life maintains the idea of individual autonomy; the ego-consciousness is understood as something transcendent (Descartes' *res cogitans*) separate even from the human body. But in Japanese-language there are no stable personal pronouns in any of the first, second or third persons. For instance, there are a lot of expressions for the first person like *watakushi, watashi, atashi, boku, ore, jibun* etc; but each of them can be used properly only in the appropriate situation. How we Japanese refer to ourselves is indeterminate until we address ourselves to other persons with their social belongings and status in a concrete face-to-face relationship. Japanese orient their attitude and behavior according to the *aida-structure* assigned them. It is to be expected that a uniquely Japanese philosophy would be characterized by a continuous attempt to explain this *aida-structure*, not only between people, but also in the interrelationship of time, space and one's self.

Literature

- Mody, N.H.N. (1932)** *A Collection of Japanese Clocks*, London
Needham, J. (1959; 1965) *Science and Civilization in China, Vol. 3 (Mathematics and the Sciences of the Heavens and the Earth), Vol. 4 (Mechanical Engineering)*, Cambridge
Uchida, M. (1975) *Nihon reki-jitu gen-ten [Japanese calendars]*, Tokyo
Watsuji, T. (1934) *Nin-gen no gaku toshite no rin-ri-gaku [Ethics as the science of the between of men]*, Tokyo
Watsuji, T. (1935) *Fudo - Its Anthropological Consideration, (in Japanese)*, Tokyo
Yamaguchi, R. (1942) *Nihon no tokei [Japanese Clocks]*, Tokyo

Time, space and history in African divination and board-games

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1. Introduction*

Heinz Kimmerle's fascination with Africa has been a move, not so much away from main-stream Western philosophy (to whose Hegelian overtones he has been particularly tuned), but towards modes of thought which might help to relativise and fertilise the Western tradition, in preparation for the global philosophy the world shall need for the third millennium CE. In the process he has developed an interest in the implicit forms of philosophising as contained in African literary productions, rituals including divination, and games.

It is significant that his recent collection *Philosophie in Afrika/Afrikanische Philosophie* (Kimmerle, 1991) contains a poetic section in which Abimbola (1991; cf. 1975) rephrases the highly standardised interpretational catalogue of the Nigerian Ifa oracle. Incidentally, one of Kimmerle's latest Ph.D. students comes from a family of diviners and seeks to render this background in his academic writing (Uyanne, 1994). Much more than in the North Atlantic world today, divination has remained part and parcel of the African everyday experience (Devisch 1985), and as such it constitutes an important perspective upon African processes of thought. There is no African society that does not have a variety of divination systems, and while many of these are highly confined in space and time, others have crossed cultural and linguistic boundaries and are found, in thinly disguised form, all over the continent. Thus Ifa is the most famous West African variant of a dominant and amazingly wide-spread family of geomantic divination systems which, first attested (under the name of *'ilm ar-ramt*) in the Arabian high culture around 1000 CE, has spread over West Africa (and from there to the Caribbean), East and Southern Africa and the Indian Ocean, Iran, India and medieval and Renaissance Europe. The structure of all these variants is identical: by simple manual chance operations¹ and involving signs which can take two values (yes/no; one/two; black/white), a specific value out of a total range of 2ⁿ values is generated (typical values for n are 4, 6 or 8), as a specific entry in a astrologically-inspired (but locally divergent) interpretational catalogue of 2ⁿ such entries (van Binsbergen, 1994, 1995b, and references cited there).

Very likely, in his visits to Africa Kimmerle has also come in contact with another formal practice ingrained in African daily life: the *mancala* board-game consisting of 2 or 4 (occasionally 3) rows of holes (typically between 5 and 20 per row) along which identical tokens (usually seeds) travel according to elaborate rules conducive to complex strategies. The game has been considered to be typical

of sub-Saharan Africa (cf. Culin, 1896; Kassibo, 1992), not only because of its ubiquity there in a great number of variants, but also because, of the five main types of board-games commonly distinguished (Murray, 1952), it is the only type to occur in Africa before colonial times.

Certain scholars have passionately claimed a predominantly or exclusively African origin for geomancy and mancala, but that is not the point here. It is my intention to show how these two long-standing features of African life, viewed as encoded forms of philosophising about time and space, help us to pinpoint the likely socio-cultural and historical context in which such philosophising came within Man's reach — thus hinting at the possible historical dynamics of categories which, ever since Kant, European thought has recognised as fundamental but as *a priori* given, without being particularly concerned with the conditions of their historical genesis. A concise theory of ritual is included as a give-away point for the attentive reader.

Let us first define the main operational concepts of the argument.

2. *The theoretical convergence of divination and board-games*

What is divination?

First we should narrow down the enormous scope of 'divination' (a virtual universal of culture). Let us agree to designate by this term:

- a. *procedures of knowledge production* which meet the following criteria:
- b. they are *institutionalised* within a particular historical culture, i.e. they are repetitive, socially shared, and show a tendency to persist over time;
- c. actors — as should be clear from their explicit speech acts as well, more implicitly, from demonstrable analogies with other forms or religious behaviour in their society — see these procedures as *involving forces beyond human control*;
- d. through these procedures the actors seek to obtain *information which is not available by direct sensory perception*;
- e. these procedures involve the use of a *specific material apparatus* (hence 'material' or 'inductive' divination — as distinct from incubation, trance etc.); often a random generator (e.g. a die, or multiple elements such as pebbles or sticks falling in an uncontrolled fashion, or an insect moving in an unpredictable way) is at the heart of the apparatus.
- f. construction and operation are subject to *rules* which may often be highly formalised.
- g. the various values (C) which the apparatus can produce ($C > 2$) are interpreted by reference to a *catalogue* of divinatory meanings which may be memorised or written out.

Board-games

Of board-games, as a category of formalised human activity, one of the classic authors in this field, Murray (1952, p.1), offers a useful descriptive definition, claiming board-games to be:

- *games* (for the essential question as to what constitute games and how they relate to other forms of play and of human activity in general, we may refer, with Murray, to the fundamental philosophical works by Huizinga (1952), Groos (1901) etc.)
- consisting of a *coherent series of consecutive movements* ('moves') of
- *physical pointers* ('pieces', 'men')
- along co-ordinates defined in a *space* ('board') which, for that specific purpose, is set apart, i.e. bounded, and internally transformed and restructured
- in such a way that formal and explicit *rules* define the movement of individual pointers as well as their interaction.

Board-games and divination compared

It is stimulating to compare the definitional characteristics of divination with those of board-games. Of course, board-games involve a material apparatus (e) however rudimentary (for many games the entire apparatus can be summed up as a few pips or pebbles, and a few lines drawn on the ground); they also involve formal rules (f). But the parallel far from ends here. Little as we may realise this, board-games, too, are devices for the production of knowledge (a) not otherwise attainable (d). This knowledge is of considerable complexity: it includes the identity of winner and loser; the extent of gains and losses; information on the participants' differential skills, integrity and stress resistance; on a more generalised plane, insights into the differential merits of such strategies as the rules allow for, the tacit or explicit rehearsal of these rules, and the detection of possible omissions, contradictions and borderline cases in the rules. With the exception of the interpretative catalogue (g) (which however might be considered analogous to the gaming rules), the one remaining item which does not seem to take part in the parallelism is (c) the actors' notion of involving forces beyond human control. However, many board-games (even some variants of chess, for instance) offset the players' conscious or semi-conscious strategies against the outcome of random generators (especially dice), in cultural contexts where these random generators are held to be controlled not by any blind impersonal forces of immanent nature, but by transcendent, supernatural entities, like those which allegedly determine the outcome of the divinatory apparatus' stochastic features.

Board-games and divination as formal models: the miniaturisation of time and space

The amazing parallelism which exists between divination and board-games cannot be found between board-games and most other items of culture. Both material divination systems, and board-games, are *formal systems*, which can be fairly abstractly defined in terms of constituent elements and rules *relatively* impervious to individual alteration. Both consist in a drastic modelling of reality, to the effect that the world of everyday experience is very highly condensed, in space and in time, in the game and the divination rite. The unit of both types of events is the *session*, rarely extending beyond a few hours, and tied not only to the restricted space where the apparatus (e.g. a game-board, a divining board or set of tablets) is used but, more importantly, to the narrowly defined spatial configuration of the apparatus itself. Yet both the board-game and the divination rite may refer to real-life situations which have the size of a battle field, a country, a kingdom or the world, and which extend over much greater expanses of time (a day, a week, a year, a reign, a generation, a century, or much more) than the duration of the session. In ways which create ample room for the display of cosmological and mythical elements, divination and board-games constitute *a manageable miniature version of the world*, where space is *transformed space*: bounded, restricted, parcelled up, thoroughly regulated; and where time is no longer the computer scientist's 'real time' — as is clearest when divination makes pronouncements about the past and the future. Utterly magical, board-games and divination systems are space-shrinking time-machines. A further crucial feature of this modelling (crucial, since without this feature divination and board-games had long gone extinct) is that it is a *two-way process*: while real life is modelled onto the divinatory or ludic session, the session and its outcome is subsequently *fed back into real life*, through information and skill gained, through prestige redistributed, personal balance and motivation restored, fears explicitly named and confronted, etc. Without such feedback (if only at the level of the person's individual consciousness) divination would be rather pointless, as an uninterpreted dream; in other words, divination is meaningful because it actively and explicitly reconstitutes the person in relation to the social and natural environment. And much as theoreticians of play would tend to emphasise the escapist or deliberately non-utilitarian, purpose-free nature of play, in board-games too there is this element of reconstitution, of learning from vicarious experience which, if nothing else, conveys the message that basic configurations of man's confrontation with the natural and social environment may be represented, schematised, played out, and thus be rendered more transparent and manageable.

Relation to narrative literature

Divination and board-games far from constitute the only forms of modelling and

...tation, and a systematic comparison with these other forms (through narrative, song, image or dance) should help us to pinpoint the specific nature of the session as a representation of a particular kind. Clearly, both divination and board-game are model versions of reality in a rather more dynamic and time-framed form than a picture or a sculpture, or even a series of these, could ever be. They are formal systems not in an abstract steady state of idleness, but define for the participants roles as protagonists which are to be dynamically and dramatically acted out from a uniform beginning, via more or less familiar but always slightly novel steps, to an essentially unpredictable end. In this they come close to oral or written narratives including myths, and on the basis of kindred forms of modelling they share the narratives' recreational, exemplary and revelatory potential.

Yet essential differences exist between the session and the narrative. In the session, the potential for identification between the human person and the representational forms is much greater than in the narrative; for in the session, the protagonists are represented not only verbally but materially, through the elements of the material apparatus, through the game pieces themselves — and these protagonists are not the narrative's named, imitable others, but are explicitly identified with the persons involved in the session; so much so, that in many games and many cultural contexts a player will describe a particular situation or move in terms of T when referring to a piece that belongs to him.⁴ In contrast with literature, the complex performances of the game-pieces and of the divinatory elements (cf. literary characters) within the modelled reality of the apparatus are not controlled by a narrator, but by respective, self-conscious Egos and/or by stochastic devices explicitly considered to be beyond human control. And this produces, perhaps as the essence of the model situation and of the participants' experience of it (and in ways only remotely resembling an oral narrator's free variations within an established genre and story-line), *an abundance of parallel trajectories, with choices whose effects are rarely immediately clear and whose ultimate outcome only gets increasingly determined while the session is already on*. Yet one might say that the experiential (both recreational and revelatory) value of divination and board-games is that they create an unlimited variety of vicarious experiences, i.e. stories. Spinning relevant, even illuminating and redeeming stories out of the raw material which the fall of the apparatus in combination with the interpretative catalogue provides, is the essence of the diviner's skill and training; and in the same way board-games can be seen as machines to generate stories in which Ego plays the leading part, confronting nature and society.

Relation to symbolism and mathematics

The formal nature of divination and board-games lies not merely in the existence of formal rules, but in the saturation of these rules with fundamental structural themes

(e.g. such basic oppositions as odd/even, male/female, life/death, high/low, white/black), which form the basis for a rich imagery and inform the dynamics of the session. At the same time these systems are formal and have been so also in archaic contexts where formalism was still *in statu nascendi*; hence their articulation would seem to be related to man's most fundamental formalism, the one with the highest survival value: early forms of counting, arithmetic, representation and manipulation of numbers.⁵

This point has a direct bearing on our two main empirical cases, mancala and geomancy. It is highly significant that both of them have given rise to sophisticated formal mathematical analysis (Qaulin, 1966, cf. 1991; Popova, 1974; Deledicq & Popova, 1977) in terms of stochastic processes, topology etc. The dynamic implications of these simple systems as revealed by mathematical analysis turn out to contain unexpected features which directly reflect on strategies in the case of mancala, on the distribution of positive and negative outcomes and on the diviner's overall management of the session's ongoing communication and interpretation process, in the case of geomancy. But even without such sophistication (which is beyond the consciousness of most real-life actors involved in mancala and geomancy) there are the simple arithmetic facts: in geomancy the dealing with odd or even (as reflected in the scoring of one or two dots in the composition of the geomantic symbol), obverse or reverse; in board-games like mancala the sheer act of counting, collecting and dishing out again, repeated as many times as the game session has moves, but anticipated in calculating strategy many more times than there are actual moves. Both forms of formal behaviour are impossible unless as applications of simple but fundamental mathematical accomplishments, and they are likely to provide an early use (and hence reinforcement, and celebration) of just those.

Thus while we would retain Groos's insight in the link between board-games and the emergence of writing,⁶ arithmetic (cf. Crump, 1994, pp.H5f) would appear to be another fundamental of their emergence; and since not only divination but also board-games are situated in a religious context (van Binsbergen, 1995a), all three Rs would seem to have made a crucial contribution, thus corroborating Murray's point⁷ that board-games reflect the emergence of civilisation.

Let us now try to capture the historical questions which such emergence would seem to pose.

3. Historical problems posed by divination systems and board-games

Appearance in human history

Modern man takes for granted his or her capability of retrospect and prospect, of testing out the dilemmas of real life in parallel model situations of reflection, planning, strategy and game, without cost or engagement; however, I submit that the invention

of such a vicarious (or, with a more up-to-date term, 'virtual') reality, as exemplified in divination and board-games, occurred at a relatively late stage in the cultural evolution of mankind. While reflecting major structural changes at the time, the amazing mental operations in inductive divination and in board-games may well in their own right have made a crucial contribution to the realisation of more complex social and productive arrangements in time and space.

Tentatively I would situate the invention of both board-games and material divination (if such a distinction could already be made by then) in a Neolithic context of emergent agriculture — without the slightest doubt man's most drastic redefinition of space and time. Let me try to spell out the terms of that revolution — without the slightest pretension of originality on my part.

The productive revolution involved in the shift (however gradual and over an extended area; cf. Renfrew, 1979) from food gathering to cultivation amounted to a *redefinition of space*. A specific section of the natural environment had to be demarcated (implicitly, as the point beyond which agricultural activity would not extend; conceptually, in order to guide the agricultural process and to define ownership rights over the crops as against rival individuals and more likely groups. And often also physically, by a fence, in order to keep marauding animals out. Internally, that bounded agricultural space, the field, had to be specifically structured and transformed: the ground would be opened in order to receive the seeds; invention of the plough would automatically systematise this transformation into more or less straight lines, furrows; and soon, in many of the early agricultural sites, a grid of irrigation or drainage trenches would become necessary.

In the same way, agriculture was to *revolutionise the sense of time*, not so much by introducing an element of seasonality (for that must always have been part of hunting and gathering, given the built-in seasonality of the great majority of natural ecosystems), but of *purpose*: not by a passive undergoing of Nature's monthly and annual cycles, but only by man's timely initiative on the basis of calculated anticipation, in preparing the soil, planting, weeding and harvesting at critically appointed times could a year's agricultural cycle be brought to a success.

Without necessarily denying the possibility of preparatory stages of 'proto-science' in the Mesolithic and Palaeolithic (cf. Marshack, 1971) it is clear that the sciences of the calendar, astronomy, geometry, arithmetic, were the direct intellectual outcomes of this Neolithic transformation of space and time, and they were soon carried to a level of formality and abstraction for which it is difficult to see a reason outside the context of agriculture. The true test for a different sense of time would appear to lie in the foresight which allowed people to save up their seeds for next season even in the face of virtually yearly food shortages, as well as investing so much energy in initiating an agricultural cycle whose pay-off would be many months ahead.

What I have said for agriculture also — but perhaps in a slightly attenuated form — applies to animal husbandry, from the clearing and fencing of a kraal (but without

further active transformation of the area of soil thus enclosed) to the active response to seasonality in terms of transhumance, provisions for mating, pregnancy, birth and infancy of the animals, gelding, festivals involving animal sacrifice, etc.

Finally, the redefinition of space and time could only mean the redefinition (or the creation, in the first place?) of the notion of *person*, situated in new time and new space, and represented (both in board-games and in the divinatory apparatus) by external tangible, often anthropomorphic material objects moving, in his or her stead, through time and space — usually interacting with other persons so represented. Board-games and divination externalise, and offer new models of, a redefined relationship between man and his physical environment, as well as between man and his social environment — with major roles of confrontation and competition being externalised in the apparatus and redefined as opponents in a schematised exchange dominated by explicit rules (board-games), or as likely partners, enemies and witches (divination).

This would mean that the distribution of board-games and divination among the world's non-agriculturalists is to be interpreted as borrowing. It falls outside our present scope to confront this hypothesis with the evidence in the archaeological and anthropological literature. However, it is certainly in line with this hypothesis that board-games are reported (Murray, 1952, p.4) to be near-universals of human culture, with the exception of Eskimos, Australians and New-Guineans before these human groups came into contact with Iron Age and post-Iron Age civilisations.⁹ In terms of productive techniques, Eskimos (cf. Birket-Smith, 1946, pp. 473f) and Australians can be said to have perpetuated until only a century ago cultural forms already found in the Palaeolithic, while the New-Guineans's digging-stick agriculture would situate them just inside the Neolithic. It is moreover interesting that in four African hunter-gatherers societies divination was found to be absent in a context where it is very frequently resorted to in agricultural societies: to ascertain the causes of death of a group member (Woodburn, 1982). The dynamics of borrowing and parallel invention are notoriously complex, and it would be very dangerous to assume that a specific level of the development of productive technique dictates a social-structural (let alone a mental) incapability for board-games. Of this we are reminded for instance by the case of the San hunter-gatherers of Southern Africa, among whom mancala is being played — but in a context where there is ample evidence, over several millennia at least, of a variety of relations (including trade, raiding, serfdom and conquest) involving not only surrounding Bantu- or Indo-European-speaking groups (Wilmsen, 1989) but also, at the end of long chains of exchange and dislocated, de-contextualised cultural influence, Middle Eastern and Mediterranean groups (Denbow & Wilmsen, 1983; Breuil, 1952).¹⁰

the relative a-historicity of divination systems and board-games

The formal nature of divination and board-games lead them to be relatively a-historic (in the sense of being rather inert in the face of general social and cultural change) and to be elude localisation (crossing cultural, linguistic etc. boundaries and, while allowing for local adaptation, diffusing in such a way that they can hardly ever be said to truly reflect the central orientation of a local culture). Therefore attempts to show how, for instance, a local variety of the mancala board-game so eminently fits the more general local culture" miss the point, since they are based on the assumption of some local cultural core from which meaning and structure exclusively springs, rather than that the latter are fragmentarily conveyed across cultural and linguistic boundaries from multiple and disconnected distant origins, finding only a very partial local integration and stream-lining.

At the same time this state of affairs would suggest that divination systems and board-games in themselves constitute very welcome guiding fossils in cultural history, hinting at spatial and temporal links between other cultural items with which they are found to be associated; yet the specific history of divination systems and board-games as such (in the sense of movement in space and transformation over time under explained conditions) is far more difficult to write.

Three basic variants of the historical relation between divination and board-games

On the basis of the parallelism between material divination and board-games their actual relationship in time and space can take a number of specific forms:

— Board-game and material divination complementarily serve identical functions, e.g. are used to mark, to visualise and to cross essential boundaries in the life of the individual and the social group. Hence the prominence of board-games in funerary and puberty rites: these are rites of passage, which (as anthropological research has shown) tend to be accompanied by divination. Hence also, for instance, the co-occurrence of family board-games and drawing-room versions of divination at Christmas as a calendar rite in 19th-c. Western Europe.

— The board-game, without denying its primarily secular, recreational nature, is interpreted by the actors as a divinatory device, i.e. its outcome is supposed to reflect on the fate of the players; examples of this abound around the world.

— The divination system is routinised and profanised into a pastime and effectively becomes a board-game. This would seem to be the case with the board-games from the Ancient cultures of the Near East, Egypt and Crete, which are partly based on astronomical or astrological notions.¹¹

A similar case seems to present itself for mancala and geomancy, as I shall presently argue.

Neolithic production as a key to the imagery of mancala and geomancy

If the above argument concerning the Neolithic context for the emergence of board-games and divination cuts wood, it offers one of the most obvious contexts in which to interpret the specific forms and imagery of both mancala and geomancy, and thus suggests a base-line beyond which we do not have to seek for historical clues and geographical connections.¹³ The fundamental image of mancala is that of a series of a few (p) parallel lines on the ground, with a number (q) of demarcated and transformed spaces defined along each line (normally $q > p$); identical elements are inserted and withdrawn from each of these spaces according to a fixed routine which yet invites human strategy and planning. In the existing literature little attention has been paid to the imagery of mancala, except from a few references to cattle,¹⁴ as if the holes are cattle kraals and the elements heads of cattle. In view of the basic two Neolithic situations outlined above: agriculture and animal husbandry, such an interpretation has a certain appeal, although it is difficult to imagine adjacent kraals whose contents undergo such rapid redistributions all the time — a game-board depicting a number of non-adjacent kraal in combination with a more clearly recognisable representation of practices of cattle raiding or the circulation of cattle in a context of marriage payments would be more convincing. On the other hand, if the holes are considered to be agricultural fields fewer difficulties arise. The parcelling up of a local area in adjacent yet separately worked and administered fields, surrounding a localised community whose ritual unity is expressed by a shrine or temple, a cemetery, a megalithic structure, etc. — a community whose main *raison d'être* may well have been to pool resources not only against outside attack but also against internal food shortages, through pooling and redistribution — fits the Neolithic archaeological record (and the form and rules of mancala) fairly well. It also has a link with the iconography of early agricultural communities, in whose representations a grid-like pattern not unlike a mancala board is a recurrent feature, even although we may not assume the correspondence to be everywhere as neat as in the major earliest forms of human writing: Sumerian (South Mesopotamian), Egyptian and Chinese writing, in all of which such a pattern indeed signifies 'field'.¹⁵ The grid-like pattern is extremely simple and hence has such ubiquity¹⁶ as may well defy any convincing systematic and converging interpretation by reference to productive and community patterns. Yet here, I stubbornly think, may be the ultimate origin of the layout of the mancala board. It remains of course to be ascertained whether (in line with the hypotheses propounded here) all grid-like representations unearthed by archaeology, are indeed Neolithic or later; in principle that would already be highly unlikely, since also Palaeolithic techniques like weaving and basket-making suppose or produce grid-like patterns; but perhaps these patterns can yet be demonstrated to be qualitatively different from those referring to agriculture.

In geomancy the husbandry angle hardly seems promising, and one would see

... the many variations of the 'art of drawing lines in the sand' as primarily an evocation of the several transformations of space through which the environment is turned into a productive field, through demarcation, clearing, ploughing, irrigation perhaps, and harvesting. Significantly, whatever departure from more original forms we encounter, there is always the link with the ground: if the divination no longer takes place on the actual ground but in a miniature representing such as the square (!) West African divining-board, then at least its bottom has to be filled with sand; if the soil imagery has been almost entirely abandoned and the system reduced to the fall of four tablets, these are at least cast upon the soil, typically a soil which is transformed by covering it with a sacred cloth or skin. I think it is highly significant that the Southern African diviner consecrates his newly-made, virgin divination tablets and renders them potent primarily by burying them, for up to a few days, in a fresh grave or underneath a busy pathway, thus allowing them to absorb chthonian powers and the related powers of the dead; and in daily practice the same diviner usually begins a session by smacking down onto the soil, with great relish, the bag containing his tablets — thus calling the chthonian spirits including his ancestors. Especially in North West Africa do ritual and divination offer many converging examples of grid-based procedures. One instance is jackal divination (Griaule, 1937; Paulme, 1937), where in the evening the soil is divided in a rectangular grid in order to be able to inspect, in the morning, if and how a jackal has disturbed the surface in that grid. Another examples concerns the harvest ritual as described by Paques (1964), and which is locally depicted exactly as if it were a three-row mancala board, with small piles of grain deposited as sacrificial offerings in the middle of each square cell, i.e. each field. In addition to an actual description of a mancala-type game (1964, p.91), Paques also presents (1964, p.83) intriguing diagrams of patterns of irrigation in arid circum-Saharan communities, which almost read as descriptions of mancala.

4. Conclusion

At this point the specific historical analysis of African geomancy and mancala can only begin, but it need not be further pursued in the context of the present book, which is devoted to time and temporality. In conclusion, let us rather examine once more time in the context of these African formal systems.

If time is miniaturised and transformed within the divinatory session and the board game, so that the reality outside the modelled session appears, to the client, as better understood and more easily confronted and manipulated, we should proceed and try to define in what specific ways this feat is brought about. *What is the temporal structure of the session? And how does the session's time relate to the time of everyday life, in the many African cultures in which these formal systems occur?*

These two questions are fundamental to my argument. Before trying to offer

even tentative answers, let me remind the reader that in this paper I have adopted an external position which abstracts rigorously from the specific cultural forms and signifying practices such as exist in each of the many local African cultures involved. I have done so in order to bring out such formal characteristics as board games and divination systems have in common across the continent. I am cultivating a distance which contrasts awkwardly and even painfully with my first-hand and intensive involvement, in the course of several decades, in a limited number of narrowly localised African situations — my main inspiration as an anthropologist. Yet I feel justified in this stance because, as I have pointed out, the formalism of these systems demonstrably does not historically spring from contemporary local African cultures, and is transferred and largely retained across cultural and linguistic boundaries on the African continent. Thus as an analyst I am tempted here to formalise without much reference to specific cultural contents such as could be mediated by African actors in the course of discussions and interviews, as their explicit comments on ludic and divinatory sessions. Perhaps this approach will ultimately wreck the entire argument, for, whatever their formal characteristics, these systems can only function and acquire meaning in specific local cultural settings; at any rate, what remains is the necessity to go back to the African actors and submit the argument to them for comments and criticism.

Even at the formal level, can we try to be more specific as to the structure of time as presented in geomantic divination and board games?

Much as the two formal systems may be historically related, on the surface they are rather different and should be approached separately. The temporal structure of the mancala game can be summarised as follows:

— There is a well-defined beginning and end.

— From an initial balance (where both players have the same number of counters) there is, through all the moves and counter-moves of the two players (and a game typically involves 'many' such moves: a few score at least), the gradual development towards a decisive imbalance, where one player defeats the other by taking all the counters.

— While the game is on, players impose upon their next few moves the temporal organisation of short-term strategies, but at any one moment in the game except towards the end, the overall odds are only dimly perceived by all but the most expert players: the strategies are short-lived eddies of purpose in an encompassing flow of largely uncontrolled and unknown 'destiny'.

— To the extent to which time is measured by spatial pointers (and empirical manifestations of time are invariably in terms of spatial displacement, in African formal systems as well as in all other situations), the appearance of the game is strikingly repetitive: not only do the players meticulously take turns, also an ever-changing number of pointers keeps being redistributed, by simple acts of collecting in one's hand and dishing out one by one, among the same limited number of cups as arranged in two to four rows, so that the place of action keeps racing around and around the gaming board.

Both in time and in space the session as well as the physical gaming board are framed within a far less structured, and unbounded, domain of events: 'everyday life'.

This description makes it clear that the temporal structure of the game is complex, ambiguous, dynamic, opaque. It cannot be readily reduced to only one of the three popular formulae of linearity, circularity and punctuality which have haunted the philosophical and anthropological literature on time and which are increasingly penetrating the African intellectual discourse on time; cf. Mbiti (1990); Adjaye (1994); Wiredu (1995). In fact, all three forms of temporality occur at the same time, in an admixture which may well constitute one of the basic characteristics of the mancala family of games, as well as the main reason for their virtually ubiquitous distribution and appeal on the African continent. The game is not only a time machine, it is a time symphony, and it amounts to a practical philosophy of time.

A similar case could be made with regard to the divination session; cf. van Binsbergen (1994, 1995b). Against the diffuse and unbounded structure of everyday life is offset the session's structured temporal format, with a clear beginning and end, and with a sequential temporal structure where question-throw-verbal interpretation-question-throw etc. succeed each other up to about forty times. And while a suggestion of linearity is offered by the session's progress from initial distress and lack of insight towards final revelation, redress and remedy, this is accompanied by themes of circularity: the fusing of references to past, present and future persons and events, the dead's continued action in the world of the living, and their reincarnation there. Here again we have to recognise the fact that the temporal structure of the divinatory session consists in a subtle combination of all three major modes of conceptualising time as can be distinguished analytically. This is why the divination session constitutes the minimal ritual *par excellence* (Werbner 1989); in fact, much of what I have said about divination applies to ritual in general, and suggests that ritual, much like the music that often accompanies it (Zuckermandl 1963), is a form of time art.

This takes me to my final point. The argument in this paper suggests that the board game and the divination session are not just alternative, parallel ways of dealing with time. They are not merely complementary to whatever may exist in the way of a conceptualisation of time in everyday life; alongside the latter they are the opposite of being unnecessary, playful, virtual. On the contrary, I submit that as implicit models of time the conceptual effects of these formal systems and the 'virtual' experience they engender, shades over onto everyday life. Here they provide some of the few available conceptualisations of time within the local culture. Starting out as models of everyday temporality, they turn around and breed a more structured sense of temporality in their own right. Thus they seem to provide the experimental grounds upon which a structured time sense is tested out and from which it may be extended so as to temporally restructure experiences in everyday life.

Our two formal systems never provide the only models of temporality, of

even tentative answers, let me remind the reader that in this paper I have adopted an external position which abstracts rigorously from the specific cultural forms and signifying practices such as exist in each of the many local African cultures involved. I have done so in order to bring out such formal characteristics as board games and divination systems have in common across the continent. I am cultivating a distance which contrasts awkwardly and even painfully with my first-hand and intensive involvement, in the course of several decades, in a limited number of narrowly localised African situations — my main inspiration as an anthropologist. Yet I feel justified in this stance because, as I have pointed out, the formalism of these systems demonstrably does not historically spring from contemporary local African cultures, and is transferred and largely retained across cultural and linguistic boundaries on the African continent. Thus as an analyst I am tempted here to formalise without much reference to specific cultural contents such as could be mediated by African actors in the course of discussions and interviews, as their explicit comments on ludic and divinatory sessions. Perhaps this approach will ultimately wreck the entire argument, for, whatever their formal characteristics, these systems can only function and acquire meaning in specific local cultural settings; at any rate, what remains is the necessity to go back to the African actors and submit the argument to them for comments and criticism.

Even at the formal level, can we try to be more specific as to the structure of time as presented in geomantic divination and board games?

Much as the two formal systems may be historically related, on the surface they are rather different and should be approached separately. The temporal structure of the mancala game can be summarised as follows:

— There is a well-defined beginning and end.

— From an initial balance (where both players have the same number of counters) there is, through all the moves and counter-moves of the two players (and a game typically involves 'many' such moves: a few score at least), the gradual development towards a decisive imbalance, where one player defeats the other by taking all the counters.

— While the game is on, players impose upon their next few moves the temporal organisation of short-term strategies, but at any one moment in the game except towards the end, the overall odds are only dimly perceived by all but the most expert players: the strategies are short-lived eddies of purpose in an encompassing flow of largely uncontrolled and unknown 'destiny'.

— To the extent to which time is measured by spatial pointers (and empirical manifestations of time are invariably in terms of spatial displacement, in African formal systems as well as in all other situations), the appearance of the game is strikingly repetitive: not only do the players meticulously take turns, also an ever-changing number of pointers keeps being redistributed, by simple acts of collecting in one's hand and dishing out one by one, among the same limited number of cups as arranged in two to four rows, so that the place of action keeps racing around and around the gaming board.

L Both in time and in space the session as well as the physical gaming board are framed within a far less structured, and unbounded, domain of events: 'everyday life'.

This description makes it clear that the temporal structure of the game is complex, ambiguous, dynamic, opaque. It cannot be readily reduced to only one of the three popular formulae of linearity, circularity and punctuality which have haunted the philosophical and anthropological literature on time and which are increasingly penetrating the African intellectual discourse on time; cf. Mbiti (1990); Adjaye (1994); Wiredu (1995). In fact, all three forms of temporality occur at the same time, in an admixture which may well constitute one of the basic characteristics of the mancala family of games, as well as the main reason for their virtually ubiquitous distribution and appeal on the African continent. The game is not only a time machine, it is a time symphony, and it amounts to a practical philosophy of time.

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course. I have already pointed at ritual as a more general related category. Obviously myth is another domain that comes to mind; it provides its own time machines, **but** not for the miniaturisation of time but for its inflation beyond human scale. A further model of temporality is offered by kinship, with its sequentiality of generations and (in most rural settings) the projection of the latter's dwellings and wider localised social groups onto the space of the local landscape. And kinship in itself often offers conceptual models for political organisation even in the total absence of biological clues; here the classic example is Evans-Pritchard's (1967, p. 94f) famous chapter on 'Time and space' in *The Nuer*. Kingship, with a genealogical sequence of dynastic identity over time, and the narrative celebration of human achievement through legend and charter, offers a further temporal model for societies which, contrary to the acephalous type like the Nuer's, are organised around formal and enduring leadership. And perhaps the most significant set of time models on the African continent is to be found in healing rituals, of which divination incidentally forms an integral part, and which make selective and transformative use of the various time models available in the local culture.

Yet among all these and possibly other models of temporality in African cultures, the exceptionally abstract, formal nature of geomantic divination and mancala board games makes them particularly illustrative, and effective, as local modes of implicit philosophising about time.

Notes

1. Earlier drafts of this paper were read as part of: van Binsbergen (1995a); and at the 'International conference on time and temporality in intercultural perspective', Rotterdam, 14-15 December, 1995. I am indebted to the African Studies Centre (ASC), Leiden, and the Department of Cultural Anthropology and Development Sociology, Free University, Amsterdam, for granting me a year of absence in which I could pursue the topics dealt with in this paper, in the inspiring context of the Theme group on Magic and religion in the Ancient Near East, Netherlands Institute for Advanced Studies in the Social Sciences and Humanities (NIAS), Wassenaar, a subsidiary of the Netherlands Academy of Sciences (KNAW). I wish to thank my friends Richard Werbner and Rene Devisch for stimulating my interest in divination; Alex de Voogt for introducing me to the literature on mancala; Frans Wiggerman for feeding me with stimulating Assyriological literature on board-games; and Irving Finkel, Jean Comaroff, Peter van der Veer and his colleagues at the Institute for the Study of Religion and Society (University of Amsterdam), Rijk van Dijk, Douwe Tiemersma, and the participants in the 1995 Rotterdam conference, for constructive criticism of earlier drafts.
2. Originally in sand, on the ground or with the use of a rimmed board, hence the generic

name of geomancy, i.e. divination by the earth, and ilm ar-raml, i.e. sand science.

3. Notable exceptions include Onians (1951) and Snell (1955); an inspiring recent exploration from a psychology perspective is Vroon (1992), cf. infra, note 6. Cassirer's chapter 'The human world of space and time' is programmatic rather than historical (1977, pp. 42f). Of course, built into sociology and anthropology ever since Durkheim (1912) has been the idea of the social origin of the experience and perception of time and space: cf. Fabian (1983); Goody (1968); Leach (1972). The Proustian chapter title 'Le temps retrouve' in Levi-Strauss (1962), ch. viii, cf. Proust (1913-1927), to which my colleague Rijk van Dijk called my attention, deals not so much with the experience of time (as among agriculturalists) but with its mythical abolition (as among hunter/gatherers).
4. Although space is lacking to pursue this point, this seems to suggest that divination and board-games find themselves somewhere halfway on a continuum stretching from external relative non-identification, as in the narrative, to internal relative identification, up to a point of literal incorporation, as in dance, trance and ecstasy — which have their own established place in the phenomenology and history of human religion.
5. Cf. Seidenberg (1960, 1961); Schmidl (1915); Zaslavsky (1990); Crump (1994); Ifrah (1991).
6. In a fascinating recent argument which (although inviting correction on many historical minor points) greatly outweighs its popular image, the psychologist Vroon (1992), leaning heavily on Jaynes (1976), has recently argued that divination, far from being a universal of culture, must be considered in the historical context of the emergence of writing; he goes on to claim that writing (and by implication divination) must have had such an enormous influence on the human brain (particularly through upsetting the balance between the two cerebral hemispheres) that for the first time in history qualitative changes in its functioning were brought about, even though man's genetically determined phenotype has not demonstrably changed since the appearance of Cro Magnon man, some forty thousand years ago.
7. Murray (1952, pp. 236f); cf. Huizinga (1952) to whom he rightly refers.
8. For a tentative theory of shrines in an agricultural context, cf. van Binsbergen (1981, pp. 107f).
9. The only truly universal game which Murray acknowledges, and which therefore receives the honour of featuring in the last, slightly incoherent pages of his History of board-games other than chess, is the string game or cat's cradle. Incidentally, Meggitt (1958) reports a board-game played by Australian Aboriginals in the 1950s, but without hesitation attributes its presence to recent diffusion from India.
10. Russ, whose enthusiasm for the mancala family of games clearly exceeds the extent of his

scholarship, prefers to enlist the San (ethnocentrically called *Bosjesmannen* — subsequently anglicised into *Bushmen* — by the first Dutch colonisers of South Africa) in a rather more romantic capacity, as the mysterious, largely vanished and unattested, hypothetical Urhebers of nothing less than the most complex and accomplished variety of the mancala game, cf. Russ (1984), — an untenable position which probably goes back to Townshend (1976-77, p. 95).

11. E.g. Townshend (1982) for *bao* in the Swahili context; Barnes (1975) for the Indonesian context of *Kedang*. The latter author however is aware of the problems I signal here (1975: 82f).

12. Murray (1952, pp. 12f); Musees (1992); Herberger (1988); and extensive references cited there. If we need pre-existing boards which could be turned into gaming-boards, astronomic/astrological apparatuses and computational aids would be a likely place to look, especially since these, already in Antiquity, often declined into grids within which the actual position of the heavens was no longer carefully calculated, but guessed through dice, cf. Boll c.s. (1966, p. 60, 191f). In view the striking similarities between West African divinatory boards, and ordinary waxed or sand (!)-covered writing-boards in Antiquity, the latter might also be considered as proto-divinatory and perhaps also proto-ludic.

13. Since this was first written, Irving Finkel kindly drew my attention to recent archaeological finds corroborating my hypothesis as to the Neolithic context of mancala: Anonymous (1990), Rollefson (1992).

14. E.g. Townshend (1976-77, p. 93). Townshend's point (1979b) that, contrary to structural-functional theoretical pronouncements, cf. Roberts et al. (1959), board-games do occur among pastoralists, is well taken. By the same token, pastoral societies have been found, cf. Long (1977) to display a marked propensity for divination, perhaps associated with the need to identify stray animals, perhaps also related to the vast geographical space in which their productive ecology revolves.

15. For Sumer: Green & Nissen (1988); Borger (1978, p. 12); character no. 105 I; Borger (1978, p. 87: standard character no. 105 I (77)). Ample Egyptological evidence in Faulkner (1962: passim, particularly around the character for 'nomos', 'district'. Similarly, in Chinese, cf. Han Ying Ccdian (1988) the character for field is a minimal subdivided grid, which as a radical occurs in a great many combinations. In the combination signifying man (agriculturalist), this representation of 'field' is already attested in the most archaic Chinese writing on seals and oracle bones (2nd mill. BCE), cf. Needham c.s. (1956, p. 226).

16. E.g. in rock art, e.g. Breuil c.s. (1954), vessel decoration, tattooing patterns, cf. Marcy (1931), textile decoration etc.

Literature

- Abimbola, W., ed. (1975) *Sixteen great poems of Ifa*, no place: UNESCO
- Abimbola, W., ed. (1991) 'Poesie VI: Aus "Sechzehn grofie Gedichte aus Ifa" ', in: Kimmerle 1991: 226-234
- Adjaye, J.K., ed. (1994) *Time in the Black experience*, Westport (Conn.)/London: Greenwood
- Anonymous (1990) 'Playing board games in the Stone Age', *"Geographica"*, *National Geographic Magazine* 177, 2
- Barnes, R.H. (1975) *Mancala in Kedang: A structural test*, *Bijdragen tot de Taal-, Land- en Volkenkunde*, 131, 1: 67-85
- Birket-Smith, K. (1946) *Geschichte der Kultur: Eine allgemeine Ethnologie*, Zurich: Orell Fiissli
- Boll, F, C. Bezdold & W. Gundel (1966) *Sternglaube und Stemdeutung: Die Geschichte und das Wesen der Astrologie: 5. durchgesehene Auflage mit einem bibliographischen Anhang von H.G. Gundel*, Darmstadt: Wissenschaftliche Buchgesellschaft
- Borger, R. (1978) *Assyrisch-babylonsche Zeichenliste*, Kevelaer/Neukirchen-Vluyn: Butzon & Bercker/Neukirchener Verlag
- Breuil, H. (1952) 'The influence of classical civilisations on the cave paintings of South Africa', *Proceedings of the first Pan-African Congress on Prehistory, Nairobi, 1947*, Oxford: Blackwell, pp. 234-237
- Breuil, H., H. Lothe & le Col. Brenans (1954) *Les roches peintes du Tassili-n-Ajjer*, Paris: Arts et Metiers graphiques
- Cassirer, E. (1977) *An essay on man: An introduction to a philosophy of human culture*, New Haven/London: Yale University Press, 28th printing, first ed. Yale UP 1944
- Crump, T. (1994) *The anthropology of numbers*, Cambridge: Cambridge University Press; first published 1991
- Culin, S., (1896) *Mankala, the national game of Africa*, US National Museum Annual Report, Washington, pp. 595-607
- Deledicq, A., & Popova, A. (1977) *Wari et solo: Le jeu de calculs africain*, Paris: CEDIC
- Denbow, J., & E. Wilmsen (1983) 'Iron Age pastoralist settlements in Botswana', *South African Journal of Science*, 79: 405-408

- Devisch, R. (1985) 'Perspectives on divination in contemporary sub-Saharan Africa', in: van Binsbergen, W.M.J. & Schoffeleers, J.M., eds., *Theoretical explorations in African religion*, London/ Boston: Kegan Paul International, pp. 50-83
- Durkheim, E. (1912) *Les formes elementaires de la vie religieuse*, Paris: Presses Universitaires de France
- Evans-Pritchards, E.E. (1967) *The Nuer: A description of the modes of livelihood and political institutions of a Nilotic people*, Oxford: Clarendon; reprint of the original edition of 1940
- Fabian, J. (1983) *Time and the other: How anthropology makes its object*, New York: Columbia University Press
- Faulkner, R.O. (1962) *A concise dictionary of Middle Egyptian*, Oxford: Oxford University Press
- Goody, J. (1968) art. 'The social organisation of time', *International Encyclopaedia of the Social Sciences*, New York: Macmillan.
- Green & Nissen (1988) *Zeichenliste der archaischen Zeichen aus Uruk*
- Griaule, M. (1937) 'Note sur la divination par le chacal (Population dogon de Sanga)', *bulletin du Comite d'etudes historiques et scientifiques de l'Afrique Occidentale Francaise*, 20, 1-2: 113-141
- Groos, K. (1901) *The play of man*, tr. E.L. Baldwin, London
- Han Ying Cidian/A Chinese English dictionary (1988) Beijing
- Herberger, CF (1988) *The riddle of the sphinx: Calendric symbolism in myth and icon*, Anixi Attikis (Greece): Efstathiadis, reprint of the 1979 edition, New York etc.: Vantage Press
- Huizinga, J. (1952) *Homo ludens: Proeve eener bepaling van het spel-element der cultuur*, Haarlem: Tjeenk Willink, 4th ed
- Ifrah, G. (1991) *Universalgeschichte der Zahlen*, Frankfurt a.m. /New York: Campus, 2. ed., repr. 1994; German tr. of: 1981, *Histoire universelle des chiffres*, Paris: Robert Laffont/Seghers
- Jaulin, R. (1966) *La geomancie: Analyse formelle*, *Cahiers de l'Homme, Ethnologie—Geographic—Linguistique*, N.S., iv, Paris: Mouton
- Jaulin, R. (1991) *Geomancie et islam*, Paris: Christian Bourgeois
- Jaynes, J. (1976) *The origin of consciousness in the breakdown of the bicameral mind*, Boston: Houghton Mifflin Cie
- Kassibo, B. (1992) 'La geomancie ouest-africaine: Formes endogenes et emprunts exterieurs', *Cahiers d'Etudes Africaines*, 32, 4, no. 128: 541-596
- Kimmerle, H., ed. (1991) *Philosophic in Afrika: Afrikanische Philosophic*, Frankfurt am Mainz: Qumran, Campus

- Leach, E., (1972) 'Two essays concerning the symbolic representation of time', in: W. Lessa & E. Z Vogt, eds., *Reader in comparative religion*, New York: Harper and Row, pp. 108-116
- Levi-Strauss, C. (1962) *La pensee sauvage*, Paris: Plon
- Long, J.K. (1977) 'Extrasensory ecology: A summary of evidence', in: J.K. Long, ed., *Extrasensory ecology: Parapsychology and anthropology*, Metuchen (N.J.) & London: Scarecrow Press, 371-396
- Marcy, G. (1931) 'Origine et significations des tatouages de tribus berberes', in: *Revue de l'Histoire des Religions* 51, tome 102: 13-66
- Marshack, A. (1972) *The roots of civilization: The cognitive beginnings of man's first art, symbol and notation*, London: Weidenfeld & Nicholson/New York: McGraw-Hill
- Mbiti, J. (1990) *African religions and philosophy*, London: Heinemann, second edition
- Meggitt, M. (1958) 'Two Australian Aboriginal games and a problem of diffusion', *Mankind (Official Journal of the Anthropological Societies of Australia)*, 5, 5: 191-194
- Murray, H.J.R. (1952) *A history of board-games other than chess*, Oxford: Clarendon Press
- Musees de Marseille/Reunion des Musees Nationaux (1992) *Jouer dans l'Antiquite, [catalogue d'une exhibition au] Musee d'Archeologie Mediterraneenne — Centre de la Vieille Charite 22 novembre 1991-16 fevrier 1992*, Marseille: Musee d'Archeologie Mediterraneenne
- Needham, J., with Wing Ling (1956) *Science and civilization in China, vol. 2. History of scientific thought*, Cambridge: Cambridge University Press
- Onians, R.B. (1951) *The origins of European thought: About the body, the mind, the soul, the world, time, and fate: New interpretations of Greek, Roman and kindred evidence also of some basic Jewish and Christian beliefs*, Cambridge: Cambridge University Press
- Paques, V. (1964) *L'Arbre cosmique dans la pensee populaire et dans la vie quotidienne du Nord-Ouest africain*, Travaux et Memoires, no. 70, Paris: Institut d'Ethnologie de PUniversite de Paris
- Paulme, D. (1937) 'La divination par les chacals chez les Dogon de Sanga', *Journal de la Societe des Africanistes*, 7, 1: 1-14
- Popova, A. (1974) 'Analyse formelle et classification des jeux de calcul mongols', *Etudes Mongoles*, cahier 5: 14-17
- Proust, M. (1913-1927) *A la recherche du temps perdu*, Paris
- Renfrew, C. (1979) *Before civilisation: The radiocarbon revolution and prehistoric Europe*, Harmondsworth: Penguin
- Roberts, J.M., M.J. Arth & R.R. Bush (1959) 'Games in culture', *American Anthropol-*

- ogist 61: 579-605
- Rollefson, G.O. (1992) 'A Neolithic game board from 'Ain Ghazal, Jordan', *Bulletin of the American Schools of Oriental Research*, 286, May 1992: 1-5
- Russ, L. (1984) *Mancala games*, Algonac (Michigan): Reference Publications
- Schmidl, M. (1915) 'Zahl und Zahlen in Afrika', *Mitteilungen der Anthropologischen Gesellschaft in Wien*, 45: 165-209
- Seidenberg, A. (1960) 'The Diffusion of Counting Practices.' *University of California Publications in Mathematics* 3, 4: 215-299
- Seidenberg, A. (1960-1962) 'The ritual origin of geometry,' *Archive for History of Exact Sciences* (Berlin), 1: 488-527
- Snell, B. (1955) *Die Entdeckung des Geistes: Studien zur Entstehung des europäischen Denkens bei den Griechen*, Hamburg: Claassen & Goverts; Eng. tr. The discovery of the mind: The Greek origins of European thought, New York: Harper & Row
- Townshend, P. (1976-1977) 'The SWA game of | | h's (das Lochspiel) in the wider context of African Mankala', *Journal - SWA Wissenschaftliche Gesellschaft* (Windhoek), 31: 85-98
- Townshend, P. (1982) 'Bao (Mankala): The Swahili ethic in African idiom', *Paideuma* 28: 175-191
- Uyenne, F.U. (1994) 'Truth, ethics and divination in Igbo and Yoruba traditions: (A reply to Emmanuel Eze)', *Quest: Philosophical Discussions*, 8, 1: 91-96
- van Binsbergen, W.M.J (1994) 'Divinatie met vier tabletten: Medische technologie in Zuidelijk Afrika', in: S. van der Geest, P. ten Have, G. Nijhoff en P. Verbeek-Heida, eds., *De macht der dingen: Medische technologie in cultured perspectief* Amsterdam: Spinhuis, pp. 61-110
- van Binsbergen, W.M.J. (1981) *Religious change in Zambia: Exploratory studies*, London /Boston: Kegan Paul International
- van Binsbergen, W.M.J. (1995a) 'Divination and board-games: exploring the links between geomantic divination and the mancala board-games in Africa and Asia', paper read at the International Colloquium 'Board-games in Academia', Leiden, 9-13 April (1995; revised version forthcoming in: I. Finkel, ed., *Ancient Board-games*, London: British Museum
- van Binsbergen, W.M.J. (1995b) 'Four-tablet divination as trans-regional medical technology in Southern Africa', *Journal on Religion in Africa*, 25, 2: 114-140
- Vroon, P. (1992) *Wolfsklem: De evolutie van het menselijk gedrag*, Baarn: Ambo
- Werbner, R.P. (1989) 'Making the hidden seen: Tswapong wisdom divination', in: Werbner, R.P. (1989) *Ritual passage sacred journey: The process and organization of religious movement*, Washington/ Manchester: Smithsonian Institution Press/

Manchester University Press, ch. 1, pp. 19-60

- Wilmsen, E.N. (1989) *Land filled with flies: A political economy of the Kalahari*, Chicago & London: University of Chicago Press
- Wiredu, K. (1995), 'Time and African thought', paper read at the 'International conference on time and temporality in intercultural perspective', Rotterdam, 14-15 December, 1995; revised version included in the present volume
- Woodburn, J. (1982) 'Social dimensions of death in four African hunting and gathering societies', in: M. Bloch & J. Parry, eds., *Death and the regeneration of life*, Cambridge: Cambridge University Press, pp. 187-210
- Zaslavsky, C. (1990) *Africa counts: Number and pattern in African culture*, Brooklyn (N.Y.): Lawrence Hill, second paperback edition; first published 1973, Boston: Prindle, Weber & Schmidt
- Zuckermandl, V., 1963, *Die Wirklichkeit der Musik*, Zurich: Rhein Verlag

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