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# A Timeline of Mind Games, with Some Correlations

Thierry Depaulis  
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## Abstract

This paper is an attempt to point out the emergence of early mind games, and to see whether this is correlated with the great steps of human history, in terms of social, political, technological and cognitive evolution. It is based on a new classification of board games, and on a combined chronology of dice and board games in the lands between the Indus Valley and Europe from the Late Palaeolithic to the first millennium CE. That race games dominate board games until the last centuries before the turn of the Common Era neatly appears in a chrono-typology. The rise of games of pure strategy nicely coincides with the emergence of what I call 'critical thinking' in both Greece (with the birth of 'philosophy') and China (with Confucius, Laozi, Mozi, and other thinkers). This is the 'age of criticism', as the great Italian classical scholar Arnaldo Momigliano has called it.

Actually, this period, spanning from 600 to 200 BCE, has for long been singled out by historians of philosophy and religions, being dubbed the "Axial Age" (*Achsenzeit*) by the German philosopher Karl Jaspers in 1949. His theory has become the subject of many books and conferences, with of course diverging views, but there is a consensus about three countries that offer strikingly parallel evolutions: Greece, India and China. I therefore contend that there was a particular historical moment that may explain why board games of pure strategy, like go (*weiqi*) and *polis*, appeared there, but also that India could have developed such board games at the same time. Comparison with other continents leads to two working 'laws', that are more intended as a basis for future thoughts and improved analysis, than a definitive conclusion.

Keywords: Ancient China, Ancient Greece, Axial Age, board games, cognitive evolution, dice, mind games, Neolithic, *polis*, *weiqi*

On ne peut point admettre un doute sur ce fait,  
Les deux premiers oisifs, fils de Cham ou Japhet,  
Qui se sont rencontrés aux déserts d'Arabie  
Quand l'eau du ciel rendait notre terre amphibie,  
Inventèrent le jeu, sur un chemin frayé,  
Avec des cailloux plats et du sable rayé.<sup>1</sup>  
(Joseph Méry, *L'arbitre des jeux*, 1847)

This paper is about 'mind games', and more specifically about board games in a long-term ('longue durée') historical perspective (Braudel 1958). By 'mind' games I mean those games "that exercise the wit", as English naturalist Francis Willughby put it in his *Book of games* written about 1665 and continued until his death in 1672 (Willughby 2003). To 'mind' games Willughby opposed those "that exercise the bodie", in other words, physical games.

The games under consideration, be they mind or body games, are here defined as formal: they have rules, and they are mainly adult games. I have thus excluded from this research all children's games, because they mostly belong to the 'play' category, that is, informal games.

Mind games are even more formalised than physical games. They are also more 'artificial', because they are the product of a design that is typically cognitive, not spontaneous, unlike physical games that are based on simple, obvious gestures, belonging to our biological, inherited nature. Mind games are intellectual (or cognitive) constructions.

Another distinction that we have to make is the presence or absence of any specific equipment. There are games played with instruments – like tennis, quoits, cards, chess, or dice – and many others that need no equipment – like running, wrestling, riddles, singing games, etc. Games with instruments are the only ones that can be tracked down in a remote past, because the objects that are used for playing these games have left traces – provided they were made of solid materials like stone, ceramics, or even bone or ivory. Durable materials are more often used in mind games than in body games, which prefer 'softer' and less durable stuff,

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<sup>1</sup>. "No one can have any doubt about this fact that the first two idlers, sons of Ham or Japheth, who met in the deserts of Arabia, when the water of the sky made our land amphibious, invented a game on a cleared path, with flat pebbles and striped sand." Joseph Méry (1797–1866) was a French poet and novelist, somewhat addicted to gambling. His *L'arbitre des jeux* is a compendium of game rules, witty poems and historical comments, not all fanciful.

like wood, leather, rope, etc. This is why we have more opportunities to find remains of mind games – dice, game pieces or gameboards – that have crossed millennia. In other words, games like dice and board games can be investigated in a ‘longue durée’ perspective, over thousands of years.

## Board Games, Their Interest

In his book *A History of board games other than chess* (Murray 1952), Harold Murray published a classified corpus of board games from large parts of the world and of all times. Later researches have greatly expanded this corpus,<sup>2</sup> adding new areas, new datings, and heretofore unheard-of games. Games from inaccessible or neglected regions, and even a few more classes, have been added. Poorly documented games have been clarified. It is on this enlarged collection of board games that this paper relies.

A board game is a mind game which consists of a gameboard (a ‘grid’ or geometric pattern drawn on a flat delineated surface), together with pieces or ‘men’ (that can be laid, sown or moved on the board), plus (sometimes) a random generator (e.g. some sort of dice); a set of rules says how the pieces can be moved and how one can win; two players or two teams compete, more rarely four. Since they require some calculation and reasoning (also called ‘strategy’), board games can be defined as ‘complex’ games. (It is their design that is complex, not always the gameplay.)

In his 1952 book, Harold Murray offered a classification of board games which is still a basic approach for all of us. Although he does not deal with history, or only very briefly, Murray’s main contribution rests on his classification, which comprises five classes:

- Games of alignment and configuration
- War games
- Hunt games
- Race games
- Mancala games (wari, awélé, solo, bao, etc.)

The board games which Murray has classified belong only to ‘traditional’ or

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<sup>2</sup>. For some of the most significant additions, see Béart 1955, Popova 1974, Bell 1979, Kabzińska-Stawarz 1991, Depaulis 1998, Ray & Ghosh 1999, Depaulis 2001, Dunn-Vaturi & Schädler 2006, Michaelsen 2012, to name just a few.

‘pre-industrial’ games, that is, those games that are anonymous – they have no recognised ‘inventors’ – and appeared before the mid-19th century, when the Industrial Revolution was spreading in Europe and North America, with its patent legislations, game publishing companies and modern distribution networks.

However, this classification can be improved. Some first steps in this direction were made by R.C. Bell (Bell 1979), whose first volume appeared in 1960, Assia Popova (Popova 1974), and Michel Boutin (Boutin 1999). Still in a historical perspective, I have revisited Murray’s classification, in the light of a larger corpus, and I have designed a ‘coded’ classification, using seven features or characters, and, within each feature, a graduated scale.

### A New Classification of Board Games

In an attempt to improve the classification of board games with more formal criteria, I have selected seven features. Each feature is ‘graded’ according to a graduated scale (‘variables’), that runs from 1 to... 2, or up to 10. The features (or characters) are below, in this order, with, for each, the ‘variables’ that can be identified.<sup>3</sup> To better spot the characters I use coloured numbers.

- 1- Level of determination: **1.** pure chance (no choice, *ludus fortunae*), **2.** chance + choice (*ludus mixtus*) with perfect information, **3.** chance + choice with imperfect information, **4.** player’s free choice (= pure ‘strategy’ or reasoning = *ludus ingenii*) with perfect information, **5.** player’s free choice with imperfect information.
- 2- Main objective: **1.** being the first to reach a position (Boutin:<sup>4</sup> ‘atteinte’), **2.** forming patterns (Boutin: ‘arrangement’), **3.** blocking the opponent (Boutin: ‘blocage’), **4.** eliminating the opponent’s pieces (Boutin: ‘élimination’), **5.** capturing one or several key pieces or taking the opponent’s home space (Boutin: ‘capture’), **6.** scoring more points or occupying more cells (Boutin: ‘score’), **7.** connecting defined points (Boutin: ‘chemin’), **8.** inferring a position or a code (Boutin: ‘déduction’).
- 3- Balance of forces: **1.** symmetrical, **2.** asymmetrical.
- 4- Nature of pieces: **1.** identical and undifferentiated, **2.** identical, differentiated, **3.**

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<sup>3.</sup> This classification scheme has been tested on some 20th-century games. But I am not sure it would work with *all* modern board games.

<sup>4.</sup> Taken from Boutin 1999.

different (asymmetrical games), 4. ranked, 5. shared but varied.

- 5- Moves: 1. regular move, 2. fixed position, 3. sowing, 4. laid then withdrawn.
- 6- Conflict resolution: 0. no conflict (either 'cohabitation', or rejection: no adverse piece can land on an occupied cell), 1. direct conflict: the occupying piece is sent back to start (save when on "protected" cells), 2. direct conflict: the occupying piece is temporarily immobilised, 3. direct conflict: capture and elimination (see following grade), 4. direct conflict: capture and re-use, 5. negotiation.
- 7- Method of capture (leading to elimination): 1. replacement (Murray a), 2. interception (Murray b-c), 3. intervention or interception (Murray d+), 4. leap (Murray e-g), 5. approach or withdrawal (Murray h-i), 6. alignment (Murray k), 7. arrangement, 8. lift (mancala), 9. approach by pair (unknown to Murray), X. calculation (rithmomachia), 0. no capture.

A game is thus awarded a seven-digit 'code', like, for instance:

2.1.1.2.1.2.0. for backgammon, or 4.5.1.4.1.3.1. for chess.

A simple automatic sorting yields interesting groupings (Figs. 1-2). This 'coded' classification results in twelve classes of traditional games. Some of these classes overlap those of Murray, some do not.

1. Simple race games (e.g. Game of Goose, Snakes and ladders)
2. Complex race games (with 3 subclasses):
  - taken pieces re-entered from start (e.g. Caupad, Patolli)
  - taken pieces immobilized and re-entered on condition (e.g. Backgammon)
  - taken pieces eliminated (e.g. Tâb games)
4. Games of pure reasoning (or of pure 'strategy') (10 classes)
  - Games of traversal (e.g. Chinese checkers)
  - Games of alignment (e.g. Nine men's morris)
  - Blockade Games (e.g. Mu-torere or Jeu militaire)
  - Mancalas (2 subclasses: one-cycle mancalas, two-cycle mancalas)
  - Games of elimination, symmetrical (e.g. Draughts or Polis)
  - Games of elimination, asymmetrical (e.g. Fox and geese)
  - Games of selective capture, symmetrical (e.g. Chess)
  - Games of selective capture, asymmetrical (e.g. Hnefatafl / Tablut)
  - Games of territorial contest (e.g. Go)

Race Games		
1. 1. 1. 2. 1. 0. 0.	baxiantu, e-sugoroku	Simple race games
1. 1. 1. 2. 1. 0. 0.	caixuan/shengguan tu ("promotion of mandarins")	
1. 1. 1. 2. 1. 0. 0.	game of goose and other European simple race games	
1. 1. 1. 2. 1. 0. 0.	sa-gnon rnam-bzhag, gyan chaupar/nagapasa, snakes & ladders	
1. 1. 1. 2. 1. 1. 0.	patol/quince, tasholiwe, tsofiā, totolospī	
1. 1. 1. 2. 1. 3. 1.	sig, li'b el-merafib ("hyena")	
1. 1. 1. 4. 1. 3. 1.	shuka/tsúka	
2. 1. 1. 2. 1. 0. 0.	game of "58 holes"; ε grammāi	Complex race games
2. 1. 1. 2. 1. 1. 0.	caupad/causar, pacisi, Parcheesi, Ludo, petits chevaux	
2. 1. 1. 2. 1. 1. 0.	chupu; dama [zh]	
2. 1. 1. 2. 1. 1. 0.	patolli; "proto-patolli", k'uillichi	
2. 1. 1. 2. 1. 1. 0.	senet, game of 20 squares ( <i>dwt, illat kalbê, aasha</i> )	
2. 1. 1. 2. 1. 1. 0.	taayam, saturankam; panche	
2. 1. 1. 2. 1. 1. 0.	wayru	
2. 1. 1. 2. 1. 1. 0.	yut; sho	
2. 1. 1. 2. 1. 2. 0.	pāsakakridā, shuangliu, sugoroku, sakhā	
2. 1. 1. 2. 1. 2. 0.	tables, nard, backgammon, jacquet	
2. 1. 1. 2. 1. 2. 0.	XII scripta, tabula	taken pieces re- entered from start
2. 1. 1. 2. 1. 2. 0.	trictac	taken pieces immobilized
2. 1. 1. 2. 1. 5. 0.	The Landlord's Game, Monopoly	
2. 4. 1. 2. 1. 3. 1.	buul, los palos	taken pieces eliminated
2. 4. 1. 2. 1. 3. 1.	kechukawe, pichica	
2. 4. 1. 2. 1. 3. 1.	tāb/sig, tabblam, daldes, sáhkku; chong	
2. 4. 1. 4. 1. 3. 1.	liubo/liuzhubo (dabo, xiaobo)	
2. 6. 1. 4. 1. 3. X.	Risk	
2. 6. 1. 5. 1. 0. 0.	(New) Entropy	
3. 1. 1. 1. 2. 0. 0.	Tantalus = Amoeba	
3. 6. 1. 4. 1. 3. 1.	Rome & Carthage	

Figure 1. A classification of race games.

Games of pure 'strategy'		
4. 1. 1. 2. 1. 0. 0.	bair, Halma, Chinese checkers	Games of traversal
4. 1. 1. 4. 1. 1. 0.	Agon	
4. 1. 1. 4. 1. 3. 2.	awithiaknakwe	Games of alignment
4. 2. 1. 2. 1. 0. 0.	gewu/wuge, sai	
4. 2. 1. 2. 1. 0. 0.	parua tabella, tic-tac-toe	
4. 2. 1. 2. 1. 3. 6.	dara, tidde, kerad	
4. 2. 1. 2. 1. 3. 6.	nine men's morris, mérelles, Mühlespiel, morabaraba, shax, felly	
4. 2. 1. 2. 2. 0. 0.	wuziqi/gomoku, renju, Pente; many Mongolian games	Blockade Games
4. 3. 1. 2. 1. 0. 0.	mu-tore	
4. 3. 1. 2. 1. 0. 0.	umul gonu and other Asiatic little blockade games	
4. 3. 2. 3. 1. 0. 0.	haretavl, orso, úxrijn ever, jeu militaire	Mancalas
4. 4. 1. 1. 3. 3. 8.	1-cycle mancalas: wari, awélé, gabata	
4. 4. 1. 1. 3. 3. 8.	2-cycle mancalas: fifanga, bao, isoló	Games of elimination, symmetrical
4. 4. 1. 2. 1. 3. 2.	jul gonu	
4. 4. 1. 2. 1. 3. 2.	nólic, latrunculi, kharbga, mig-gmag, malingan	
4. 4. 1. 2. 1. 3. 3.	mak-yek, apit-sodok, shit-kwet kya, hasami-shogi	
4. 4. 1. 2. 1. 3. 4.	chite-n lysan = tiddatt	
4. 4. 1. 2. 1. 3. 4.	Abalone; Gipf	
4. 4. 1. 2. 1. 3. 4.	bashne, Laska	
4. 4. 1. 2. 1. 3. 4.	pasang, konane	
4. 4. 1. 2. 1. 3. 4.	draughts, alquerque de doce; ersêsêr (Bataks); some Asiatic games	
4. 4. 1. 2. 1. 3. 4.	tioki, choko, yoté	
4. 4. 1. 2. 1. 3. 5.	fanorona	Games of elimination, asymmetrical
4. 4. 1. 2. 1. 3. 9.	anakan, apakan, liufan / liuziqi, nepat gonu, p'au kei	
4. 4. 2. 3. 1. 3. 3.	musashi, jūrokumusashi, shiliu gan jiangjun	Games of selective capture, symmetrical
4. 4. 2. 3. 1. 3. 4.	baghchal, tiger/leopard game, buga	
4. 4. 2. 3. 1. 3. 4.	komikan (= taptana, komina?)	
4. 4. 2. 3. 1. 3. 4.	renard et poules, fox and geese, assalto, loup	Games of selective capture, asymmetrical
4. 5. 1. 4. 1. 3. 1.	chess, xiangqi, makruk, šatar	
4. 5. 1. 4. 1. 3. 3.	rek	
4. 5. 1. 4. 1. 3. X.	rythmomachia, metromachia	Games of territorial contest
4. 5. 1. 4. 1. 4. 1.	shogi	
4. 5. 2. 4. 1. 3. 2.	gāla (Sulawesi)	Connexion games
4. 5. 2. 4. 1. 3. 2.	hnefatafi, tablut, fidhchell, brandubh, gwyddbwyll	
4. 5. 2. 4. 1. 3. 4.	jeu de la guerre	
4. 6. 1. 1. 2. 0. 0.	Razzia	
4. 6. 1. 1. 2. 4. 7.	Reversi/Othello	
4. 6. 1. 2. 2. 3. 7.	fangqi	
4. 6. 1. 2. 2. 3. 7.	weiqi/go	
4. 7. 1. 2. 2. 0. 0.	Lightning, Hex, Trax, Twixt, Havannah	

Figure 2. A classification of 'strategy' games.

'Level of determination' is, in my opinion, the most important feature: it concerns the players have or do not have a power of decision and a complete (or limited) choice. In race games, where a random generator is used, this freedom is limited.

ited by chance. These games are often ‘mixed’: they combine chance and freedom of reasoning (or strategy). However, there are games where chance governs all: when each player has only one game piece, she/he has to follow the outcome of the dice cast and the rules that determine the moves according to position. No choice is possible, the ‘level of determination’ is nil (here coded as 1). The Game of Goose and some games of North American Indians are of this kind.

Race games have some special features which distinguish them from all other classes: not only do they use ‘dice’ or any random generator, but the design of the gameboard is always made of ‘single-track’ (or unilinear) lines, one or two, that are conveniently bent, shaped into a U or an S, coiled into a spiral, or even forming a square (like taayams in southern India), just to offer a more comfortable board (Fig. 3). Whatever the shape of the track, it can always be put back to a straight line. On this single track, the players’ pieces can move only forward, sometimes backward, but never to the sides. The structure of the game is simple, and its objective is to be the first to reach the end of the track. In this sense race games require less cognitive working than games of pure strategy.

Race games are typically ‘narrative’ games: they are often interpreted as paths toward the afterlife, or as some ‘sacred’ journey, with stations, accidents, conflicts, etc., or they can be the basis for cosmological metaphors. Since they are submitted to chance, they are often considered as governed by supernatural forces. Canadian psychologist Merlin Donald (Donald 1991) has described a cognitive transition between Prehistory and ‘historical’ societies, that he calls the ‘Mythic Culture’ and the ‘Theoretic Culture’. It is a transition, from the Upper Palaeolithic to a more developed cognitive step where humans use ‘external memory devices’, like signs, pictographs, and finally writing. With Jerome Bruner,<sup>5</sup> Donald distinguishes “two major modes of thought, the narrative and the paradigmatic. Narrative imagination constructs stories and historical accounts of events. Paradigmatic imagination seeks logical truth. Narrative skill develops early and naturally in children, whereas the logical-scientific skills that support paradigmatic thought emerge only after systematic education.” (Donald 1991: 256-7).

It is tempting to project this distinction onto the evolution of board games. We can see some ‘narrative’ mode in race games, where the pieces have to move from one end to the other following a single track, and are often ‘explained’ by stories, while the ‘new’ strategic board games, like *polis* and *go*, would reflect the ‘logical-scientific’ cognitive approach.

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<sup>5</sup> Jerome Bruner, *Actual minds, possible worlds*, Cambridge, MA, Harvard University Press, 1986.



We will see how important this distinction between race games and all the other board games is.

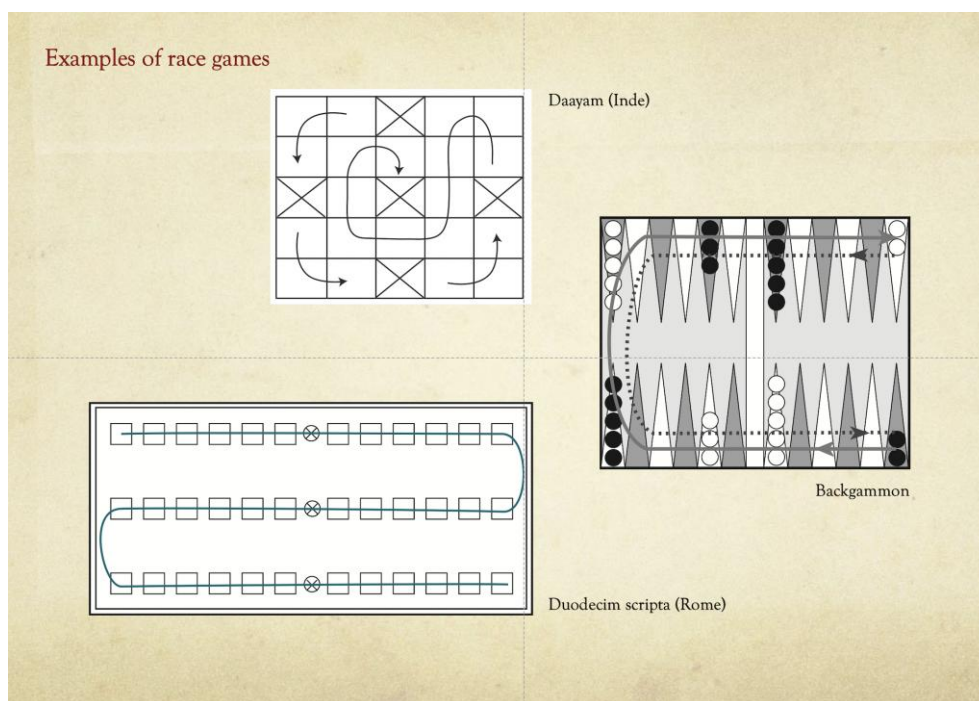


Figure 3. Examples of race games.

### A Chrono-Typology of Board Games

First here is a simple chronology of the appearance of significant board games, from the best dated evidence until 1000 CE (Fig. 4). We immediately see that games without chance – games of ‘strategy’ – appear much later than race games (here in red)<sup>6</sup>.

<sup>6</sup> For the classification of the Egyptian game *mehen* among race games, see Masters in press.



Figure 4. A broad timeline of the most significant board games before 1100 CE (red: race games; blue: games of alignment; green, hunt games).

If we then set up a chrono-typology, where the different classes of games are put on a time scale graduated in periods of 250 years, and starting from 4000 BCE (to give ourselves a little margin), until the present (2000 CE) (Figs. 5 and 6), it becomes obvious that most, if not all, games before the beginning of the Common Era are 'race games', and, before *ca* 500 BCE, they are mostly exclusive.

The two earliest attested games of 'strategy', Greek *polis* and Chinese *weiqi* (go) appear between 450 BCE and 300 BCE. *Polis* (πόλις) is a Greek draughts-like game attested (from literary sources) from 443/442 BCE, and go, or *weiqi*, or *yi* as it was called in ancient Chinese sources, dates back to *ca* 300 BCE. (On this phenomenon, see below.)

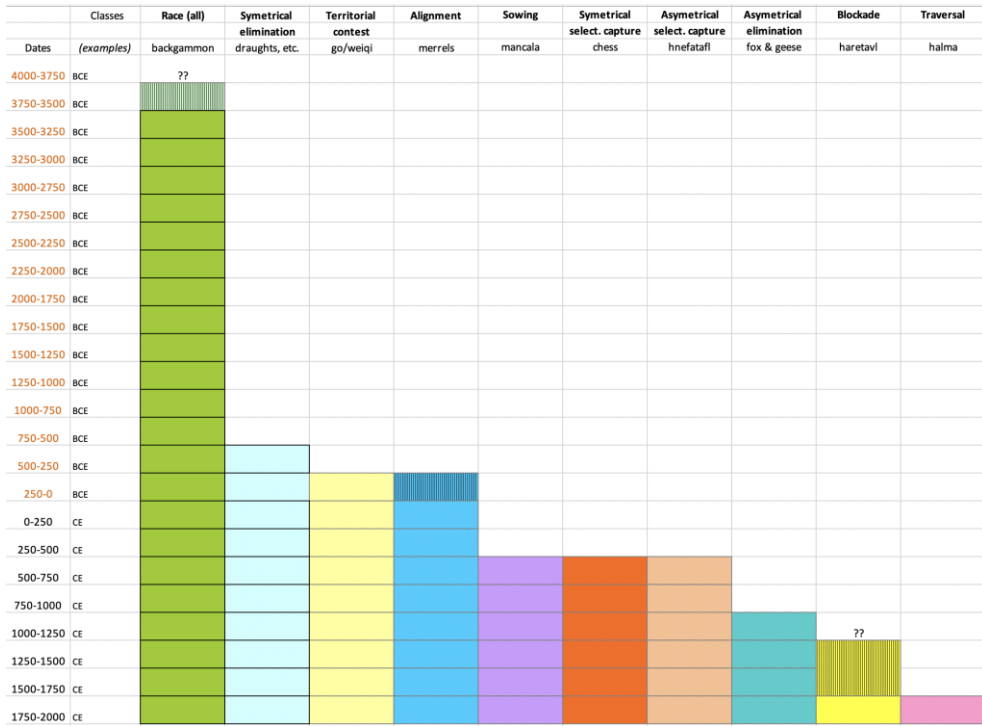


Figure 5. A vertical representation of a chrono-typology of board games from 4000 BCE to 2000 CE, by class.

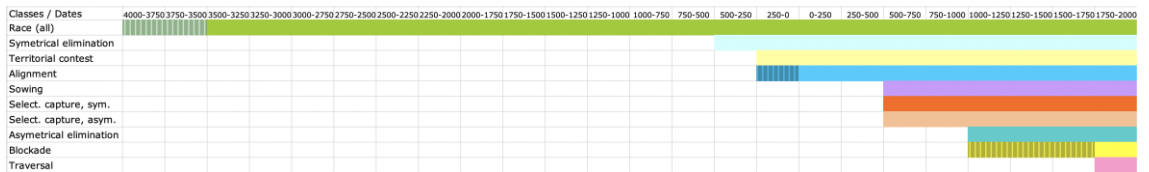


Figure 6. A horizontal representation of a chrono-typology of board games from 4000 BCE to 2000 CE, by class, that makes it more visible.

## A Highly Schematic Reminder of Human Evolution and a Broad Sketch of a Possible Evolution of Dice and Board Games

Let us try to place this evolution of board games over the ‘longue durée’. To better understand how board games are part of the process, I use here a simplified chronology. Historians have divided human history between Prehistory and History, the latter being characterised by the invention and use of writing. Together with writing come important phenomena, like increased social stratification (social classes), political organisation (a ‘state’ and a ruler), official religion, specialised craftsmen, planned cities, etc. Although Prehistory can be applied to all non-

literate societies, it is today split between better-defined periods, whose limits are based on major changes in human evolution. The rise of a sedentary lifestyle followed by the introduction of agriculture, has been called the Neolithic Revolution, thus distinguishing this new period from Palaeolithic times (formerly called ‘Stone Age’), characterised by hunting and gathering, and a very simple way of life, mainly nomadic.

This so-called Neolithic Revolution first happened in the Near East (also called Western Asia). In this region, the end of the Neolithic sees the emergence of new technologies such as the invention of earthenware (pottery), the discovery and use of metals (gold, silver, copper, then bronze, an alloy), the spinning and weaving of wool and linen, the consumption of milk and its by-products, like cheese. In this process, human societies have adopted more complex patterns of organisation. The earliest notions of arithmetic and geometry (Damerow 1999) and the use of tokens for keeping track of commodities (Schmandt-Besserat 1992) appear at this time. Then we have the rise of the first states and civilisations.

No games have been evidenced from Palaeolithic times. The literature on Prehistory – here defined as Palaeolithic and Mesolithic periods – is definitely silent. Prehistorians have never published any materials which could be interpreted as gaming instruments. The earliest board games that can be ascertained are *mehen*, the ‘coiled serpent’, and *senet*, both from Egypt (Crist, Dunn-Vaturi, de Voogt 2016), and the ‘game of twenty squares’ (e.g. the ‘Royal Game of Ur’), all related to early states.

Even if some believe that board games were played in the early Neolithic, that is, at a very early stage, it is hard to find any evidence. A too long time gap and a considerable change in shape must prevent us from seeing these finds as primitive board games. At best they could be dice counting devices, but they more probably are fireboards (Depaulis 2020).

As far as dice are concerned, the earliest objects we can understand with certainty as ‘dice’ are the Maikop Culture<sup>7</sup> dice (analyzed by Klejn 1999) and some early cubic dice from the Indus Civilisation and Mesopotamia. Knucklebones, even when they show traces of wear, may or may not be gaming instruments, and, if indeed used for games, these may be of any kind, like throwing games, not necessarily games of chance.

From this broad sketch of a possible evolution of dice and board games (Fig. 7),

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<sup>7</sup> A major Bronze Age archaeological culture in the western Caucasus region, dated *ca* 3700–3000 BCE.

we can observe a strong correlation between the emergence of the early states and the earliest board games. It would be naive, of course, to accept that board games sprang up out of nothing with the first states. Like civilisation itself, board games as we know them must have had forerunners. However, of these forerunners we know absolutely nothing. The only point we can rely on is the observation I made previously, that is, that all early board games, from *ca* 3500 to *ca* 500 BCE are race games.

There is a general consensus that dice, and dice games, are earlier than board games. Although we have no typical dice before *ca* 3500 BCE (in the Maikop Culture), ethnographical data, as reported from the 16th–19th centuries, show that dice can be made with natural, slightly modified materials (cowries, prune stones, maize kernels, coloured beans, vegetable twigs, etc.). Two-sided instruments, used in sets of three or four (or more), make very acceptable random generators. But being made of perishable stuff, they are ephemeral and leave no traces in archaeological records. We nevertheless may postulate the existence of such primitive dice much before 3500 BCE, perhaps as early as the Neolithic Revolution.

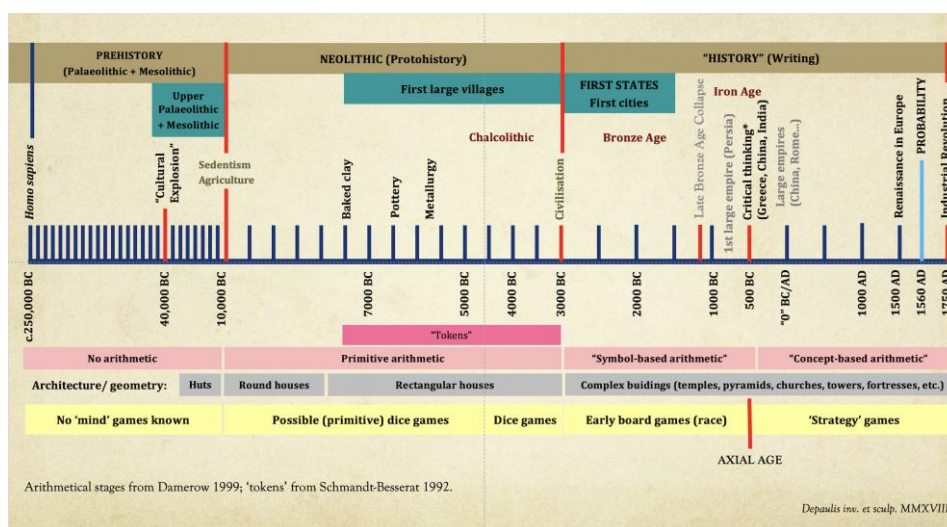


Figure 7. An attempt at a combined chronology of dice and board games in the lands between the Indus Valley and Europe.

In this perspective, we would have first 'simple' or 'primitive' dice games, where elementary configurations (all black, or half black/half white) determine a winner. Later, more complex dice games may have appeared with a true scoring, i.e. translating the outcome in terms of 'points', thus needing to count them.

Because scoring became more complex, a scoring device may have been used, and, actually, we know some dice games that used sticks or pebbles as tokens,

which were placed along a dotted line, thus forming a kind of racetrack. Such games have been reported among the Paiutes of Nevada, with *tatsungin* (Culin 1907: 167; Murray 1952: 148), or from West Africa with a Lebu game from Senegal called *horbido* (Béard 1955: 426-7). They are described as dice games, what they definitely are. These games offer a kind of transitional model between dice and board games.

But board games like the ones found in the American Southwest have also been classified by Culin (Culin 1907) as ‘dice games’, whereas Murray and his followers interpret them as true board games. Was Culin so short-sighted? Not necessarily. All these board games – *patol*, *kints*, *sholiwe*, etc.<sup>8</sup> – rely only upon chance: each player has only one game piece, so that she/he is forced to move her/his pieces according to the points of the dice and/or of the ‘accidents’ she/he encounters (like the ‘river’, the ‘doors’, an adverse piece, etc.). There can be no strategy. Although these games are actual board games, they may also be interpreted as some kind of dice game because they are ruled entirely by chance. So Culin was logical.

### The Emergence of Strategy Games and the ‘Axial Age’

The emergence of strategy games in Greece (*polis*) and China (*weiqi*) within a period of a few centuries (namely 500–200 BCE) seems to nicely match the rise of ‘critical thinking’ in these cultures. In Greece we have the Pre-Socratic philosophers, then the various competing schools of Greek philosophy, in a context of competing policies (Athens, Sparta, Thebes, Corinth, etc.), while, in China, we see Confucius, Mencius, Laozi, Mozi and other thinkers, also competing and criticising the ancestral order. It is the time of the so-called Warring States. This particular age has been dubbed the ‘Axial Age’ (or ‘Axial Period’) by the German philosopher Karl Jaspers (1883-1969) (Jaspers 1949, transl. 1953). Actually, Jaspers added Persia (with Zoroaster), India (with the Buddha and the Upanishads) and ancient Israel with the ‘Second Temple’ Prophets. However, Zoroaster is a too elusive figure, of whom we know almost nothing, and the Biblical Prophets are not really comparable to the Chinese, Indian and Greek thinkers. There are in these countries no competing states.

Since then, scholars have shown that Jaspers’s idea was indeed solid (save for Zoroaster). Although the ‘Axial Age’ is more often studied from the perspective of

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<sup>8</sup> These games are in fact more probably at the end of a process of simplification from a more complex board game, as I have recently showed (Depaulis 2018).

the history of religions, it can be more narrowly defined as what I call ‘critical thinking’, that is, when some learned people started to question the official religion, the traditional social order and the established rules of power. Three societies offer striking parallels at roughly the same period: China, India and Greece. In India, the rise of Buddhism and Jainism, as well as of many other philosophical schools, finds its way roughly around 400–200 BCE, and in a similar political context of competing powers (the sixteen ‘tribal territories’ or ‘Mahajanapada’) (Kulke 1986). Interestingly, this is also the time when coinage was introduced, precisely in these three areas (Graeber 2011, chap. 9).

In these three regions, the Axial Age is characterised by:

- the outbreak of many rival schools of thought
- a political fragmentation (several rival states): in Greece, the wars between city-states (e.g. Athens vs. Sparta); in India, the sixteen Mahajanapada (or ‘tribal territories’); in China, the Warring States
- an intensification of armed conflicts
- the introduction of metallic coinage (Graeber)
- increased familiarity with writing (Graeber)
- the emergence of a new class of ‘intellectuals’

The Axial Age ends with the building of large empires: in China, the Han Empire; in India, the Maurya Empire; in Greece, the Macedonian Kingdom, then Alexander the Great.

In Greece, the Axial Age begins when the board game *polis* (πόλις) appears, a symmetrical game of elimination, without chance, where the pieces move in all directions on the board, in short a kind of draughts, but with a different mode of capture. The earliest reference to *polis* is from Cratinos, an Athenian comic poet, in his comedy *Drapetides* (“Female Runaways”), ca 443/442 BCE (Kurke 1999: 255-6). Until then, Greek board games – like ‘pente grammai’ – were race games. Strikingly, this is also the moment when the model of the democratic city, aptly called ... *polis*, which opposed oligarchy and tyranny, emerges in Athens.

Almost at the same time, in China we see, around 300 BCE, the appearance of a game of pure ‘strategy’, *weiqi* (or go) (Fairbairn 2007). Our earliest reference is in the *Analects* of Confucius which tell us about it as a contemptible game (Zanon 1996)... *Weiqi* was preceded by an earlier board game called *liubo* (literally the “game of six”). This game, with a complex track and rules that are still poorly understood, clearly is a race game where the ‘dice’ are six two-sided sticks.



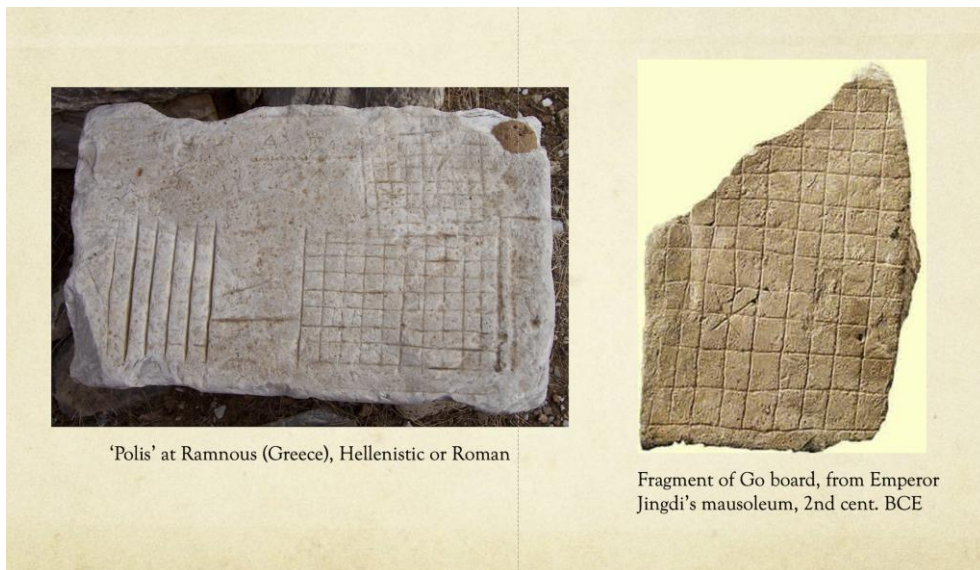


Figure 8. *Polis* and *weiqi*, two early games of 'strategy'.

Strikingly, both games, *polis* and *weiqi*, are played on a square, squared board, a kind of gameboard that seems to be novel (Fig. 8). Until then, gameboards had had a great variety of shapes, like three parallel rows (Egyptian *senet*), a spiral (Egyptian *mehen*), a kind of 'ladder' (Greek 'five lines'), or any other shape, though strangely not as an orthogonal 'grid'. It seems the grid form appears with *polis* and *weiqi*, as the ideal field to allow 'free' movements (or placing) of the game pieces, that are entirely controlled by the mind, without any element of chance.

Unfortunately, there is no clear evidence of board games in India prior to the 4th century BCE. And we do not know what kind of games *aṣṭāpada* ("8 squares") and *daśapada* ("10 squares"), quoted in Buddhist literature before the Common Era, were. They probably presented a grid-like gameboard, a little like the Greek *polis*, but some hints point to the use of dice. However, *aṣṭāpada* and *daśapada* should be reconsidered in the light of the Axial Age theory.

We have no clue to understanding how race games gave rise to board games of pure strategy. Of course, there is Murray's well-known theory about the origin of chess (Murray 1913: 37-44): according to Murray, chess evolved from *aṣṭāpada*, which he assumed to be a race game played on the same 8x8 gameboard but using dice, somewhat like the 'taayam' games of southern India. Although this suggestion is ingenious, there is no clear evidence of such an evolution. (And where do the chesspieces come from?)

No 'transitional' game has ever been found in antiquity, even if 'tāb' games form an interesting case study, as Yuri Averbakh (Averbakh 1997) and I myself



(Depaulis 2001) have pointed out, since they are both race and war games. (Murray classified them among his 'War Games', although I have demonstrated they are definitely race games.) However, the earliest records of 'tāb' games are not reported before the 2nd half of the 1st millennium CE.

## In Other Regions of the World

The timeline I have presented is limited to a large area that surrounds the Mediterranean Sea, and stretches from the Indus Valley to Western Europe, including North Africa. Here the late emergence of strategy board games seems clear enough. We can see that China follows the same pattern of evolution, with *liubo*, a race game, being earlier by a few centuries than *weiqi*.

If we turn our eyes to other parts of the world, Pre-Columbian America offers board games that are race games too: *patolli* among the Aztecs, and a much older game whose ancient name is unknown but that survives until today as *k'uillichí* (in Purépecha, the Tarascan language), and is found as early as Teotihuacan (100 to 700 CE) (Depaulis 2018), while in the Andean area, Inca board games, as far as we understand them, are also clearly race games (Depaulis 1998).

If we accept the idea that these Pre-Columbian societies were comparable to what Egypt and the ancient Near East were like in terms of development, we may infer that the evolution of board games there matches our broad evolutionary trend. (No 'Axial Age' has been recognised there.) The question whether there were strategy games in pre-contact America is still under discussion with no clear evidence.

In Africa, mancala games are not seriously documented before the beginning of the Common Era. If we stick to dated artefacts, we see that the oldest datable mancala boards were found in Axum (today Ethiopia), and they are archaeologically dated to the 7th–8th century CE (Pankhurst 1971), and even doubts arise about these dates (de Voogt 2021). This again confirms the theory that games of pure strategy (like mancala, chess or merrels) come much later than race games. Their emergence before the Common Era seems to be related to the rise of 'critical thinking', that is, the Axial Age.

## Conclusion(s)

My findings suggest two inferred working 'laws':

1) No board games can exist before state formation

- ☞ Board games can only arise in an 'early state' society<sup>9</sup>
- ☞ Proposition: an 'early state' must have board game(s)<sup>10</sup>

2) No board games other than race games can exist before ±500 BCE

- ☞ 'Strategy' games seem to arise first in 'Axial Age' regions (i.e. Greece, China, and supposedly India); they appear to be linked with the rise of 'critical thinking' (i.e. 'philosophy')

While race games have a wide diversity of track designs, 'strategy' games favor grid-like gameboards – save for mancalas, which have their own typical shape.

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<sup>9</sup>. For the concept of 'early states', see Claessen & Skalnik 1978.

<sup>10</sup>. This is true of 64% of my sample of 22 'early states', with 22% uncertain and only 14% undocumented. See Appendix.

## Appendix

(Sample of 'Early' and 'Mature' States from Claessen & Skalnik 1978, with some additions and corrections)

### *Early States*

Conventional Name	Beginning <sup>11</sup>	Writing	Board game(s)
Elam / Susia	3300 BCE	yes	yes
Sumer	3200 BCE	yes	yes
Upper Egypt	3100 BCE	yes	yes
Mesopotamia	3000 BCE	yes	yes
Indus	2600 BCE	yes	yes
Helmand / Jiroft (Marhashi ?)	2500 BCE	yes	yes
BMAC / Oxus <sup>12</sup>	2300 BCE	no	yes
Minoan Crete	2000 BCE	yes	yes
Erlitou (China)	1800 BCE	no	no
Helladic (Mycenes)	1650 BCE	yes	yes
Hittites	1600 BCE	yes	yes
Erligang (China)	1500 BCE	no	no
India (first kingdoms)	1200 BCE	no	no
Persia (Achaemenids)	550 BCE	yes	?
Monte Albán (Mesoamerica)	300 BCE	yes	?
Teotihuacán (Mesoamerica)	100 BCE	yes	yes
Axum	100 BCE	yes	yes
Koguryō (Korea)	35 BCE	yes	?
Kushan Empire	30 CE	yes	?
Mayas (Mesoamerica)	200 CE	yes	yes
Moche (Mochica)	200 CE	no	?
Khmer Kingdom	800 CE	yes	yes

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<sup>11</sup>. All approximate dates.

<sup>12</sup>. Bactria-Margiana Archaeological Complex, later called Oxus Civilization and now... GKC culture (Greater Khorasan Civilization), 2300- 1700 BCE. Probably not a state.

(total 22) 64% yes, 22% uncertain, 14% no (undocumented)

*Mature States*

Conventional Name	Beginning	Writing	Board game(s)
Shang (China)	1300 BCE	yes	no
Kush	800 BCE	yes	yes
Spring and Autumn (China)	771 BCE	yes	no
Etruria	750 BCE	yes	yes
“Classical” Greece	600 BCE	yes	yes
Warring States (China)	500 BCE	yes	yes
Rome (Republic)	500 BCE	yes	?
Maurya (India)	300 BCE	yes	yes
Parthian Empire	250 BCE	yes	?
Rome (Empire)	50 BCE	yes	yes
Tiwanaku	100 CE	no	no
Persia (Sasanians)	225 CE	yes	yes
Wari	500 CE	no	no
Sriwijaya (Indonesia)	650 CE	yes	yes
Ghana (Empire)	700 CE	no	no
Kanem (later Kanem-Bornu)	700 CE	no	?
Champa	850 CE	yes	?
Chimú	1200 CE	no	?
Mali	1200 CE	no	?
Aztecs	1300 CE	yes	yes
Tarascans	1300 CE	no	yes
Inca	1400 CE	no	yes

(total 22) 50% yes, 27% uncertain, 23% no (undocumented)

In the Board game(s) column, ‘no’ means we have no evidence of any board game, either because too few data have been collected, and the material culture of the population is poorly documented, or because board games used perishable materials (cloth, wood, etc.) only. It does not mean the region had no board games at all. A question mark indicates we are uncertain about it: the

logics of evolution and diffusion imply that a particular board game should have been known in the said state, but evidence, literary or material, is lacking for this.

## References

- ÁRNASON, Johann P., EISENSTADT, Shmuel N., WITTRÖCK, Björn (eds.) (2005): *Axial civilizations and world history*. Leyden, Brill (Jerusalem Studies in Religion and Culture, 4).
- AVERBAKH, Yuri (1997): "About the transformation of race games into war games", in Alex de Voogt (ed.), *Proceedings: Board Games in Academia, Leiden 1997*.
- BARBEYRAC, Jean (1709): *Traité du jeu: où l'on examine les principales questions de droit naturel et de morale qui ont du rapport à cette matiere*, 2 vols., Amsterdam, Pierre Humbert. *Seconde édition, revue & augmentée*, 3 vols., Amsterdam, Pierre Humbert, 1737.
- BEART, Charles (1955): *Jeux et jouets de l'Ouest africain*. 2 vols. Dakar, IFAN (Mémoires de l'Institut Français d'Afrique Noire, no. 42).
- BELL, Robert Charles (1979): *Board and table-games from many civilizations. Revised edition*. New York, Dover.
- BELLAH, Robert N., JOAS, Hans (eds.) (2012): *The Axial Age and its consequences*. Cambridge, MA, Harvard University Press.
- BOUTIN, Michel (1999): *Le livre des jeux de pions*. Paris, Bornemann.
- BRAUDEL, Fernand (1958): "La longue durée", *Annales: Économies, Sociétés, Civilisations*, Vol. 13, no. 4, Oct.-Dec., pp. 725-753.
- CLAESSEN, Henri J. M. and SKALNIK, Peter (eds.) (1978): *The Early State*. The Hague-Paris-New York, Mouton (Studies in the Social Sciences, 32)
- CRIST, Walter, DUNN-VATURI, Anne-Elizabeth, DE VOOGT, Alex (2016): *Ancient Egyptians at play : board games across borders*. London, Bloomsbury Academic.
- CULIN, Stewart (1907): *Games of the North American Indians*. Washington, D.C., Government Printing Office (24th Annual Report of the Bureau of American Ethnology, 1902-1903).
- DAMEROW, Peter (1999): *The material culture of calculation*. Berlin, Max-Planck-Institut für Wissenschaftsgeschichte.
- DANILOVIC, Sandra, & DE VOOGT, Alex (2021): "Making sense of abstract board games: toward a cross-ludic theory", *Games and Culture*, Vol. 16, no. 5, pp. 499-

518.

- DE VOOGT, Alex (2021): "Misconceptions in the history of mancala games: antiquity and ubiquity", *Board Game Studies Journal*, 15, pp. 1-12.
- DEPAULIS, Thierry (1998): "Inca dice and board games", *Board Games Studies*, 1, pp. 26-49.
- DEPAULIS, Thierry (2001): "Jeux de parcours du monde arabo-musulman (Afrique du Nord et Proche-Orient)", *Board Games Studies*, 4, pp. 53-76.
- DEPAULIS, Thierry (2018): "Ancient American board games, I: From Teotihuacan to the Great Plains", *Board Game Studies Journal*, 12, pp. 29-55.
- DEPAULIS, Thierry (2020): "Board Games Before Ur?", *Board Game Studies Journal*, 14, pp. 127-144.
- DONALD, Merlin (1991): *Origins of the human mind: three stages in the evolution of culture and cognition*, Cambridge, MA, Harvard University Press.
- DUNN-VATURI, Anne-Elizabeth, SCHÄDLER, Ulrich (2006). "Nouvelles perspectives sur les jeux à la lumière de plateaux du Kerman", *Iranica Antiqua*, XLI, pp. 1-29.
- EISENSTADT, Shmuel N. (ed.) (1986): *The origins and diversity of Axial Age civilizations*. Albany, New York, SUNY Press.
- FAIRBAIRN, John (2007): "Go in China", in Irving L. FINKEL (ed.), *Ancient board games in perspective: papers from the 1990 British Museum colloquium, with additional contributions*. London, The British Museum Press, pp. 133-137.
- GRAEBER, David (2011): *Debt: the first 5,000 years*, Brooklyn, New York, Melville House.
- JASPERS, Karl (1949): *Vom Ursprung und Ziel der Geschichte*, Munich - Zurich, R. Piper & Co.
- JASPERS, Karl (1953): *Origin and goal of history*. New Haven, Yale University Press.
- KABZIŃSKA-STAWARZ, Iwona. 1991. *Games of Mongolian shepherds*. Warsaw, Institute of the History of Material Culture, Polish Academy of Sciences (Library of Polish Ethnography, 45).
- KLEJN, Leo S. (1999): "The early evolution of dice between the Danube and the Indus: contributions to the early history of mathematics", *Acta Archaeologica*, 70, pp. 113-135.
- KULKE, Hermann (1986): "The historical background of India's Axial Age", in Eisenstadt 1986, pp. 383-392.
- KURKE, Leslie (1999): "Ancient Greek board games and how to play them", *Classi-*

*cal Philology*, 94, pp. 247-267.

MASTERS in press. "A Reappraisal of Mehen, the Egyptian game of the Snake"

MICHAELSEN, Peter (2012): "Haretavl – Hare and hounds as a board game», in *Of boards and men: board games investigated. Proceedings of the XIIIth Board Game Studies Colloquium, Paris, 14-17 April 2010*, Thierry Depaulis (ed.). Paris, BGS (CD), pp. 37-53.

MURRAY, Harold J.R. (1913): *A history of chess*. Oxford, Clarendon Press.

MURRAY, Harold J.R (1952): *A history of board games other than chess*. Oxford, Clarendon Press.

PANKHURST, Richard (1971): "Gabata and related board games of Ethiopia and the Horn of Africa», *Ethiopia Observer*, XIV, no. 3, pp. 154-206.

PARLETT, David (1999): *The Oxford history of board games*, Oxford, Oxford University Press.

PARLETT, David (2018): *Parlett's history of board games: updated edition*. Brattleboro, VT, Echo Point.

POPOVA, Assia (1974): "Analyse formelle et classification des jeux de calculs mongols", *Études mongoles*, 5, pp. 7-60.

RAY, Nirbed, GHOSH, Amitabha (ed.) (1999): *Sedentary games of India*. Calcutta, The Asiatic Society.

SCHMANDT-BESSERAT, Denise (1992): *Before writing*. Austin, TX, University of Texas Press.

WILLUGHBY, Francis (2003): *Francis Willughby's Book of Games: a seventeenth century treatise on sports, games and pastimes*, ed. David Cram, Jeffrey L. Forgeng & Dorothy Johnston. Aldershot, Ashgate.

ZANON, Paolo (1996): "Philosophical discussions on the game of *weiqi* in the times of the Warring States and the Han dynasty", *Ludica, Annali di storia e civiltà del giuoco*, 2, pp. 7-19.