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Research on the merels game in medieval China

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Abstract

The merels game is a kind of board game that has been played in the Mediterranean region since the Antiquity and spread all over Eurasia during the Middle Age. There are three types of merels boards in China, among which the type with three-layer concentric squares and diagonals is the most common. After reviewing all the available archaeological data, this article shows that this game spread to China along the grassland Silk Roads. It was introduced into the Bohai State at the latest during the Tang Dynasty (AD ninth century) and became popular in the northern grassland and northeast China regions during the Liao and Jin Dynasties (AD tenth-thirteenth centuries). It spreads to the Central Plains as early as the Northern Song Dynasty and kept on circulating during the following centuries. During the Ming Dynasty, it was called “*Macheng*” and became a popular chess game often played in the streets.

Keywords

Merels game board . Bohai state . Song Liao Jin and Yuan dynasties . Grassland silk roads

1 Introduction

Board games are a kind of intellectual and competitive entertainment that have been practiced for over two millennia in Eurasia. Small round game pieces are common finds on medieval sites in China but are rarely associated with a specific game. The merels game, also called “merels” or “mill game” is a “three-in-line” game played on a board with intersections, each player has nine pieces and tries to align them, allowing a player to remove the opponent’s piece from the board, a player wins when his opponent has only two pieces left or is unable to make a move. It belongs to the many kinds of board games played in ancient China. In the past, Chinese scholars mainly focused on board games having more historical records associated with them, such as the *Liu bo* 六博, *Wei qi* 围棋, *Xiang qi* 象棋, *Tan qi* 弹棋, *Shuang lu* 双陆, and so on (Xu 1997). Less attention has been paid to folk chess such as merels (Wu 2000; Hao et al. 2014; Ye 2018). Due to the lack of relevant literature, merels game boards are often not recognized, mistakenly identified, or merely described as carved ornaments (Neimenggu 2014; Chengdu 2011: 195). Scholars even interpret carved merels boards as astronomical symbols, attributing them to prehistoric times (Zhong 2010). Using merels boards discovered in archaeological contexts, this article discusses the issue of its emergence and development process in China. After summarizing previous research, this article establishes a typology of the excavated boards and discusses the evolution and transmission of this game in ancient China.

2 Discoveries and research on the merels board outside China

Merels game was especially popular in Europe during the Middle Age. The Encyclopedia Britannica describes it as: Nine men's morris, also called Morris, Mill, Merels and so on, board game of great antiquity, most popular in Europe during the fourteenth century and played throughout the world in various forms. The board is made up of three concentric squares and several transversals, making 24 points of intersection. In modern play the diagonal lines of the board are usually omitted. Two players, each provided with nine counters, each player is entitled to remove from the board one counter, but not one that is in a mill, when one's pieces get three in a row (a mill) upon any line. The game ends when an opponent has two pieces left. (The Editors of *Encyclopaedia Britannica* 2019). The rules of this simple game are the same in China. The Encyclopedia Britannica mentions two forms of merels boards, distinguished by whether or not there are diagonal lines.

In fact, there are many variations of the board design and of the number of pieces used in the game. In China, a third form, with four concentric squares and diagonal lines is also found. The three board types discovered in China will be referred to here as A-type, B-type, and C-type merels boards (Fig. 1). The difference in design influences the length and difficulty of the game. Type B is the classic design of the “nine men's morris”, type A is complemented by diagonals which create more intersections, and type C, sometimes called “spider-web” type, is a variation of type A with an additional concentric square. In Murray's typology of three-in-line games (Murray 1978: 37–50), the Chinese B-type boards correspond to Murray's F type, and the Chinese A-type board corresponds to Murray's G type, the Chinese C-type board being only a variation of the latter.

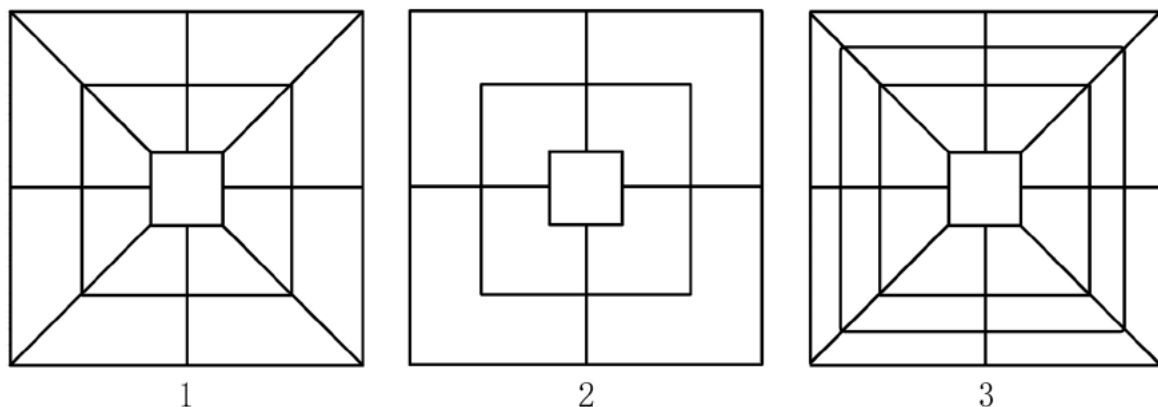


Fig. 1 Three types of merels boards. 1. A-type board; 2. B-type board; 3. C-type board

Seven boards carved on the roof of the Kurna temple in Egypt are often cited as the earliest evidence of this game, while some authors date this drawing from the construction of the building (1400–1350 BC), it actually belongs to an ensemble of 34 graffiti which encompass many other figures, like Coptic crosses. As many graffiti on Egyptian monuments which have been incessantly visited by travelers of every time periods, this board cannot be dated with precision and is generally considered as belonging to the AD first millennium (Berger 2004). Two boards carved on stone stairs steps in Sri Lanka are said to be not later than the AD first century (Bell 1969: 93; Murray 1978: 44), but such carvings in easily accessed locations seem equally impossible to date with certainty. Roman period boards provide more reliable data, most of the square specimens belong to the B-type. Two examples of association of merels board with mancala game are found in western Turkey: a square and a round merels boards carved on a major Roman period street of Ephesus (west Turkey) (second century BC - AD third century), and a square board on a step of the Aphrodisias theatre (first century BC - AD fourth century) (Schädler 1998; Roueché and de Chaisemartin

1993: 109). Many other examples of round and square Roman period merels boards have been discovered in Sevilla region (Amores 2014). In the eastern Mediterranean region, at the Roman site of Bosra (Syria), A and B-types merels boards are carved in the theatre and the cistern, they date between 106 and 634 AD, but these locations have been easy to access since, and they remain impossible to date with more precision (Fig. 2.1–2) (Berger 1999; Berger 2004). In addition, a board was incised on a slab initially belonging to a Hellenistic building (fourth century BC–first century BC), but reused and placed in a Christian burial dating from the AD third or fourth century in Toprakli (eastern Turkey) (Berger 2004). The merels was not only played on the margins of the Roman Empire but also in the heart of Rome, as attested by a B-type board carved on the steps of the Basilica Julia in the Forum in Rome (AD late third to early fifth century) (Falkener 1892: 364–366) and by a double-sided board with a B-type merels design on one side and backgammon on the other has also been found in Ostia (fourth century BC–AD fourth century) (Austin 1934).

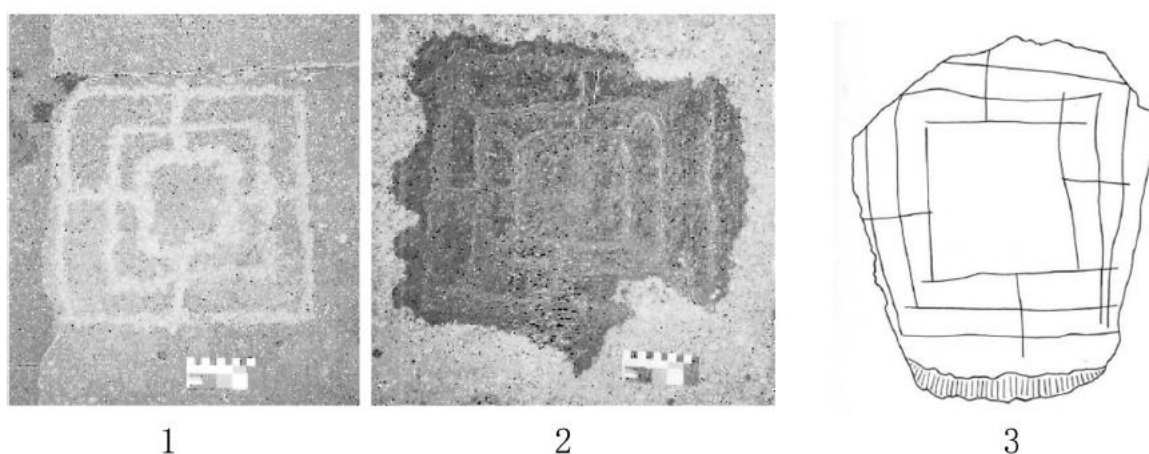


Fig. 2 Merels boards in Middle East. 1–2. B-type and A-type Merels boards carved in Bosra. (after Berger 1999, Figs. 1 and 2 p. 23); 3. B-type Merels board from Bestam, pottery shard (after Kleiss 1979, p. 155, Fig. 2.4 and p. 152, no. 74/54)

In the historical records, the earliest mention of this game seems to be the rules explained by Ovid (43 BC–AD 18) in *Ars Amatoria* (III, 365–8) (Berger 2004). Berger argues that “the Romans may have received the game from Sri Lanka via Egypt” through maritime commercial roads (Berger 2004). But, so far, no early archaeological findings can prove this hypothesis. The A-type merels game appears in Arabic sources in the tenth c. when it seems to have been played in Mecca (Murray 1969: 194; Berger 2004). It is documented again in an Arabic text of the early fifteenth c. but first appears in Western Europe in the sixteenth c. (Murray 1978; Bourgeois 2001).

Several boards have been discovered in Medieval Western Europe. Two B-type merels wooden boards were found in Viking boat burials: one is engraved with another game on the verso (Gokstad, Norway) and is securely dated from the end of the AD ninth century (Nicolaysen 1882), the other one (Årby, Sweden) is dated from the early AD tenth century (Arbman 1940). In France, the games dated between the 10th and the twelfth c. have mostly been discovered in aristocratic contexts, comforting the functions of reception and sociability of these privileged spaces (Bourgeois 2001).

The most cited example in medieval Europe is by far the B type board painted in the *Libro de los juegos* (“Book of Games”), commissioned by King Alfonso X of Castile (r. AD 1252–1282) in 1283. It describes the recreational activities of the nobles of Spain, and reflects the popularity of this game amongst the Spanish upper classes at the time (Fig. 3.1) (U. Erdenebat 2012: 114–134). In addition, William Shakespeare (AD 1564–1616) describes

merels as a game of shepherds in his drama, *A Midsummer Night's Dream*, indicating that it was popular among workers and farmers in sixteenth century Britain (Gomme 1964: 416). So it seems that the merels was popular in Western Europe during the Late Middle Ages among all levels of society.



Fig. 3 European merels boards. 1. B-type merels board from the *Libro de los juegos* (“Book of Games”) commissioned by Alfonso X of Castile (1283); 2. B-type merels board from the Sarkel site, Russia; 3. C-type merels board from the Sarkel site, Russia (after U.Erdenebat 2012: 114–134)

Further east, a B-type board was found at the Bestām (Bastam I) upper fort in western Azerbaijan province in Iran (Fig. 2.3) (Kleiss 1979: 152, 155). It is incised on a pithos shard. Even if the report attributes the stratum from which it was unearthed to the first half of the 1st millennium BC, it could be more reasonable to attribute it to the pre-Islamic period (AD fourth to sixth century) (Schädler and Dunn-Vaturi 2016). These boards could be linked to the Sogdian culture. In addition, several merels boards carved on bricks were unearthed at the Sarkel site in the Upper Don River Valley in southwest Russia, east of Ukraine. These boards belong to the B-type, except for one example of a C-type board (Fig. 3.2–3). The Sarkel site was a stronghold of the Khazar Empire between AD 834–965, and these boards can be attributed to the ninth or tenth centuries (U.Erdenebat 2012: 114–134).

Further inland, merels boards were found in Central Asia and East Asia at the eastern end of the Eurasian grasslands, and they date later than the ones unearthed in the Middle East. For example, a B-type merels board is carved on a tombstone, now placed in front of the Pendžikent Museum in Tajikistan (Fig. 4.1), it can be dated from the AD seventh century (Berger 2004: 11–25). In recent years, A-type merels boards have been unearthed at the Uvur gorge site in Khotont soum (Fig. 4.2) and at the city site of Khar Balgas, in the Arkhangai province in northern Mongolia (Fig. 4.3–5) (U.Erdenebat 2012: 114–134). This second merels board is carved on a square brick, 30–32 cm in length. In addition, a C-type merels board carved on a sheep talus and glass game pieces were also found at Khar Balgas. The city of Khar Balgas is the capital of the Uighur Khaganate, built in AD 744 and destroyed in 840 by the Kirghiz. The Uvur gorge site is a Uighur cemetery located about 3 km south of Khar Balgas. Therefore, the merels boards unearthed in Mongolia should date from the AD eighth or ninth centuries.

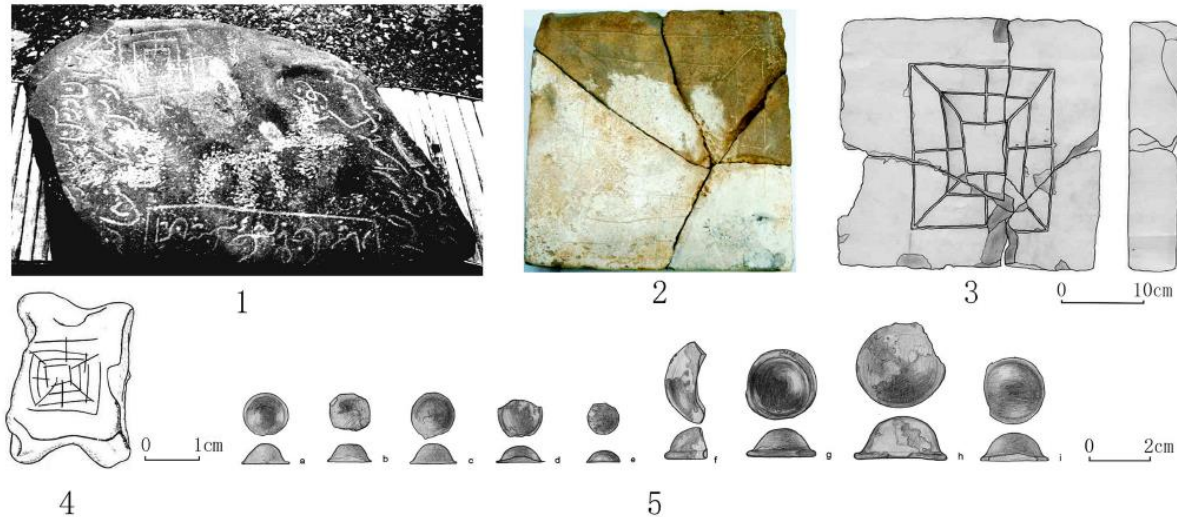


Fig. 4 Merels board remains found in Tajikistan and Mongolia. 1. B-type merels board carved on a tombstone; 2–3. A-type merels boards carved on bricks; 4. C-type merels board carved on a sheep talus; 5. Glass pieces. (1. Collection of Pendžikent Museum in Tajikistan; 2. Uvur gorge mausoleum, Khotont soum, Mongolia; 3–5. Khar Balgas city site, Mongolia) (after Berger 2004: 11–25; U.Erdenebat 2012: 114–134)

The origin of merels game is difficult to ascertain. The board carved on the Egyptian temple of Kurna, like other graffiti on the temple, is impossible to directly associate with the architecture (Ryan 2008: 1–3). Well documented occurrences date from Roman times, with the A-type and B-type boards discovered in Roman Syria predating the examples from Europe, Central Asia, and Mongolia. Berger (2004: 11–25) shows that the terms used to designate this game in European languages all have Latin origins. In the beginning of the twentieth century, Stephens' (1937: 264–267) hypothesis was that the merels game originated in the Palestinian region and spread to France during the Crusades, then becoming increasingly popular in Europe between the twelfth and the sixteenth centuries. According to the archaeological materials published so far, the B-type merels board appeared in the southwestern Russian steppe of southeastern Europe in the ninth or tenth centuries and spread through Europe between the twelfth and sixteenth centuries. U.Erdenebat believes that the game came from the Middle East and was introduced to the Uighur region via Central Asia, through Sogdian exchanges (U.Erdenebat 2012: 114–134).

3 Types and chronology of merels boards found in ancient China

In China, this game has had different names, such as *Lian qi* 连棋, *Lian huan ma qi* 连环马棋, *Zhi qi* 直棋, *Cheng san qi* 成三棋, and *Ji ri ge* 吉日格, and different forms of merels boards existed (Zhou 2009: 94–98; Hao et al. 2014). The three types of boards found in Medieval China can be described as follows:

A-type merels boards are the most common. Most of these boards were carved on bricks and have been discovered in sites belonging to the Bohai 渤海 State (AD 698–926), and to the Song 宋 (AD 960–1279), Liao 辽 (AD 916–1125) and Yuan 元 (AD 1271–1368) dynasties. A few boards have also been found carved on mountain rocks in the Central Plains of China. Characteristic examples include eight boards found in Northeast Asia, especially in Northeast China, one in South China, and another in Central China, described below:

1. A fragmentary stone game board was found in the city site of Kraskino, seat of the Yanzhou 盐州 city of the Bohai State, and once belonging to the territory of the Tang 唐

Dynasty. It is located in the Khasan district in the Russian coastal region (Ivliev et al. 2012; Jilin 2013: 144). It was unearthed from a small house in the city. This board, 26 cm in length, consists of two concentric squares and diagonal lines carved on sandstone (Fig. 5.1). According to the analysis of the building materials of the house and comparison with the tiles from the adjacent early Bohai temple and with the other artifacts unearthed in the house (such as bronze belt buckles, hairpins, hairpins and pottery), this object should date from the ninth or early tenth centuries (Bulkina et al. 2007: 146–160). This is the earliest example of a merels board found in China so far, and the only one attributed to the Bohai State.

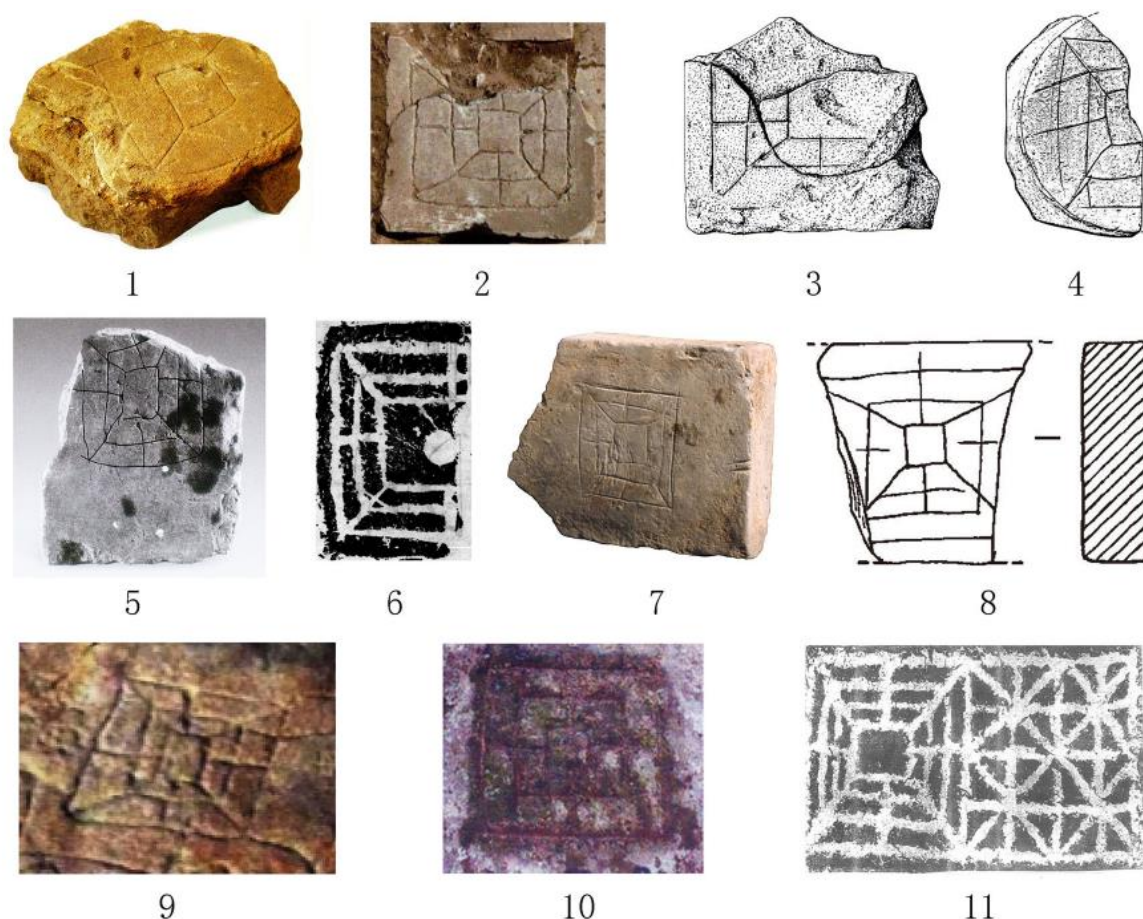


Fig. 5 Examples of merels boards in ancient China. 1–9. A-type merels board; 10. B-type merels board; 11. C-type merels board and Lu qi board. 1. Kraskino city site (Jilin 2013: 144); 2. No. 4 building site of the Liao Imperial mausoleum in Chifeng (Guo 2011: 170); 3. Yongping site in Baicheng (Jilin 2016: 15–17); 4. Chengsijiazhi city site in Baicheng; 5. Longxing Temple in Qionglai (Chengdu 2011: 195); 6. Border fortress of the Jin Dynasty in Huolinhe mining area, Tongliao (Shao 1984: 157–174); 7. Tahucheng city site in Songyuan (Jilin 2017: 94); 8. Shandu of the Yuan Dynasty, in Xilinguolemeng (Neimenggu 2014); 9. Juci mountain, Xinzheng (Song 2012: 172–175); 10. Yizuomao mountain, Harbin (Han and Na 2010); 11. Baiyun Mountain, Lushan (Xu 2001: 368)

2. An A-type merels board carved on a brick was found on the west side of building no. 4 at the Liao Imperial mausoleum 辽祖陵 in Chifeng 赤峰 Inner Mongolia 内蒙古 (Fig. 5.2). This building is a religious architecture belonging to an accompanying tomb of this imperial funerary complex (Guo 2011: 170), namely the burial of Yelü Lihu 耶律李胡, third son of Emperor Liao Taizu 辽太祖, who died in 960 (CASS 2016: 3–23). Therefore, the architecture where the board was discovered was built during the beginning of the Liao Dynasty and the board can be dated to the AD tenth century.

3. An A-type merels board carved with a rectangular structure on a broken brick was found at the Yongping 永平 site in Baicheng 白城, in the northwest of Jilin 吉林 Province. Three concentric rectangles with diagonal lines were carved on the back of a grooved brick (20 cm in length) (Fig. 5.3). Yongping is a temple site built during the middle and late phases of the Liao Dynasty and continuously used during the following Jin 金 Dynasty (Jilin 2016: 15–17). Therefore, the merels board can be dated between the eleventh to early thirteenth centuries.

4. In the same region, a carved pottery sherd was found near the east gate of the Chengsijiazi 城四家子 city site in Baicheng. This vessel base was carved with an A-type merels design measuring 11.1 cm in diameter (Fig. 5.4). The Chengsijiazi city site corresponds to the Changchunzhou 长春州 city of the Liao Dynasty and Xintaizhou 新泰州 during the Jin Dynasty mentioned in the historical records (Song 2009: 92–95). A large number of pottery sherds belonging to the Liao and Jin Dynasties were found in association with this board. Therefore, it can be roughly dated between the tenth to thirteenth centuries.

5. Two A-type merels boards were found in the Jinjiahao 金界壕 border fortress of the Jin Dynasty in the Huolinhe 霍林河 mining area in Tongliao 通辽, eastern Inner Mongolia. One of them was unearthed in building no. 6. It was carved on a brick fragment measuring 11 cm in length and is represented by three concentric squares with four straight lines and four diagonal lines and a circular dot at the center of the board. The excavation report describes it as a *lian qi* board (Fig. 5.6). Two finely polished blue round stone pieces were also unearthed in this building. This border fortress was built before AD 1181 (Shao 1984.2: 157–174). Therefore, this board can be attributed to the end of the twelfth or the thirteenth century, and was most likely played on by soldiers.

6. Another A-type board carved on a brick was excavated in 2015 at the Baomacheng 宝马城 site in Antu 安图, in southeastern Jilin (Zhang et al. 2016: 15). The temple architectural complex of Baomacheng was built by King Lingying 灵应 of the Xing 兴 state to worship the Changbai Mountain 长白山 divinity in AD 1172 (during the twelfth year of the Jin Dynasty Dading 大定 Emperor) (Zhao 2015), so this board dates from the late twelfth or the beginning of the thirteenth century, and was probably played on by people working at or visiting this temple.

7. An A-type merels board, also carved on a brick fragment, 16.6 cm in length, was excavated at the Tahucheng 塔虎城 city site in Songyuan 松原 (Fig. 5.7) (Jilin 2017: 94). The Tahucheng city site corresponds to the Zhaozhou 肇州 city of the Jin Dynasty in the historical records, and was also occupied during the following Yuan Dynasty (Peng 2015), so this board can be dated between the twelfth and fourteenth centuries.

8. Another A-type merels board on a brick fragment (9.5 cm in length) was found in the palatial site at the Shangdu 上都 capital of the Yuan Dynasty, in Xilinguolemeng 锡林郭勒盟, in Inner Mongolia (Fig. 5.8). This palatial compound was built between 1256 and 1258 (Neimenggu 2014). Therefore, this merels board can be attributed to the thirteenth or fourteenth centuries.

9. An A-type merels board carved on a rectangular gray brick fragment (22 cm in length) was unearthed at the Longxing Temple 龙兴寺 site in Qionglai 邛崃, Sichuan 四川 province (Fig. 5.5). It was discovered in a layer of collapsed architectural materials, Buddha statues of the Tang Dynasty, and a large number of porcelain fragments from the Five Dynasties (AD 907–960) and Song Dynasty. According to the report, this layer can be dated to the Northern Song Dynasty (late tenth to early twelfth century) (Chengdu 2011: 195).

The A-type boards carved on bricks appear mostly in Northeast China, in a variety of contexts, such as religious architectural complexes, military caserns, domestic city life, and palaces. The choice of material seems to be directly linked to convenience: when killing time, a board could be easily drawn on a piece of discarded architectural material to play for a short amount of time. It could have been played by anyone, regardless of one's social class, occupation, ethnicity, or beliefs.

In other regions of Central and South China, a large number of A-type merels boards have been discovered among rock carvings. Over ten locations, including Mount Tai 泰山 in Tai'an 泰安 and Jiulong Mountain 九龙山 in Qufu 曲阜 in Shandong 山东 province (Li 2011), Juci Mountain 具茨山 in Xinzheng 新郑 in Henan 河南 province (Fig. 5.9) (Song 2012: 172–175), Jiangjun Cliff 将军崖 in Lianyungang 连云港 in Jiangsu 江苏 province (Gao 2009: 177–123), have yielded carved boards. These boards are mostly 20–40 cm in length. They sometimes have been interpreted as astronomical chronicle symbols and attributed to prehistoric periods (Zhong 2010). This view is clearly open to discussion. First, these boards have all been carved on horizontal flat rock in places that are perfect to sit face to face. Secondly, they are often associated with *Lu qi* 鹿棋 board carvings, which is a further indication of the leisure and gaming function of these spots. Judging from the current archaeological materials, *Lu qi* boards with a clear date have been found in a Liao Dynasty tomb in Jianchang 建昌 in Liaoning 辽宁 province (Feng and Deng 1983.9: 66–72), at the border fortress of the Jin Dynasty in the Huolinhe mining area in Tongliao (Shao 1984), and at Karakorum, the Yuan Dynasty capital in Mongolia (Kiselyov et al. 2016: 252). Therefore, the *Lu qi* was a northern game popular during the Liao, Jin, and Yuan dynasties, contemporary with the development period of the A-type merels boards. In recent years, the merels boards rock carving of the Jiangjun cliff in Lianyungang have been dated by microerosion dating method as 2035 ± 200 and 857 ± 200 years ago (Zhang 2018). The second age, corresponding to the twelfth century, is consistent with previous findings and seems more reasonable than the first. Therefore, in all likelihood, the A-type boards carved on horizontal rocks should be mostly contemporary with their counterparts on bricks.

Only one *B-type merels board* has been discovered so far in China, in Yizuomao 一撮毛 Mountain in Harbin 哈尔滨, in Heilongjiang 黑龙江 province. This board was carved on a flat rock at the summit of the mountain. The original report mistakenly identifies it as a *Liu bo* board of the Han 汉 Dynasty (206 BC - AD 220) (Han and Na 2010) (Fig. 5.10). *Liu bo* is a popular board game from the Warring States Period (481–221 BC) to the Han Dynasty. A basic *Liu bo* board is a square with a smaller square at the center, V-shaped marks at the corners, and L-shaped marks at the center of the edges, and most boards also have four marks (usually circular but sometimes shaped as a decorative pattern) between the corner mark and the central square (Huang 2010). The Yizuomao Mountain design does not show this type of structure, and as with all rock carvings, it is almost impossible to date with precision. Based on its design, we argue that it is clearly a B-type merels board.

Only one occurrence of a *C-type merels boards* has been found so far in China, carved on a flat rock in the Baiyun 白云 Mountains in Lushan 鲁山 County, in Henan Province. It was adjacent to a *Lu qi* board (Fig. 5.11) (Xu 2001:368). Once again, this remarkable association tends to reinforce the hypothesis of a contemporaneity of the two games, both attributable to the AD tenth to fourteenth centuries.

To sum up, the merels game boards found in China mostly belong to the A-type, they appear in the ninth century, and they show a large diffusion across all the contexts of the northern steppes and northeast Medieval cultures, from the Bohai State, to the Song, Liao, Jin, and Yuan territories until the fourteenth century. They are mostly carved on discarded architectural materials (bricks), but are also found on horizontal rocks in mountainous areas.

4 Origins and development of the ancient Chinese merels board

The Mongolian scholar, U.Erdenebat (Erdenebat 2012) believes that the merels game in Mongolia comes from the Middle East and Central Asia, having been imported by the Sogdians. It is a reasonable hypothesis: so far, the Roman boards from Syria predate the examples found in Europe and East Asia. The seventh century B-type merels board on a tombstone in Tajikistan gives important evidence on the transmission trajectory of this game through Eurasia. During the Tang Dynasty, the grassland Silk Roads across northern Eurasia were an important channel for all kinds of exchanges: cultural, religious, technical, conceptual, linguistic, etc. The Sogdians were active all along the Silk Roads and some groups progressively settled in the Tarim Basin, the Mongolian Plateau, and northern China (Rong 2001: 20). In the middle of the eighth century, Tibetan power, taking advantage of a rebellious episode disrupting the Tang Empire, occupied the Hexi 河西 and Longyou 陇右 regions, blocking important oases of the Silk Roads. Then, the Grassland Silk Roads under the control of the Uighur Khaganate remained the main transportation channel across Eurasia. With the opening of the “Uighur Road,” a large number of Sogdian merchants and Western messengers coming to the Tang Dynasty’s territory went through the Uighur Khaganate. The city site of Khar Balgas became an important hub on the “Uighur Road” (Chen 1987). Therefore, it is very likely that the merels board discovered in the city site of Khar Balgas was introduced from Central Asia by Sogdians or other merchants.

The merels board discovered in the Yanzhou City of the Bohai State may have been introduced by foreign merchants such as Sogdians and Uighurs travelling across Eurasia (Wu 2019: 199–205). The merels board of Yanzhou City dates from the ninth to the early tenth centuries and does not predate the merels boards of the Uighur Khaganate. Their shapes are the same, both of them belonging to the A-type. During the Tang Dynasty, Yingzhou 营州 (modern day Chaoyang 朝阳, in Liaoning province) (Su 2012: 94; Huo and Zhao 2019) was a settlement of merchants from Central Asia in northeast China. The Bohai State, as an imperial prefecture state of the Tang Dynasty, called Huhanzhou 忽汗州, had always maintained friendly and close contact with Tang. Yingzhou was an important city on the main communication axis between the Bohai and the Tang territories, also called the “Yingzhou Road” 营州道. Merchants of the western regions probably penetrated the Bohai State further east through Yingzhou. Based on his analysis of materials excavated from the Yanzhou city site, Shavkunov (2017) believes that there were once Central Asian merchants’ villages in or near Yanzhou City. Therefore, this simple and easy-to-learn game could have been introduced into the Bohai State through contact with foreign merchants, such as the Sogdians, through important communication axis cities such as Yanzhou.

According to the currently available archaeological data, directly after the introduction of the A-type merels board to the Bohai State during the Tang Dynasty, this type of board was only found at Yanzhou, and there is no evidence that it spread into the Tang territory. Later, during the Liao and Jin Dynasties, A-type merels boards began to spread throughout the Northeast Plains and the northern grasslands of China (Fig. 6). In fact, the Liao Dynasty territory covered most of the land previously occupied by the Uighur Khaganate and the Bohai State (Tan 1996a: 37; Tan 1996b: 4), thus connecting the Northeast Plains more closely with the northern grassland region, laying the foundation for the spread of many cultural traits, such as the A-type merels game.

Three transmission trajectories can be considered for this game to spread during the Liao period. The first scenario is that the Bohai people were forced to move into the Liao

hinterland after the Bohai State was destroyed by the Khitan, and they brought the game with them. The second possibility is that Uighur people introduced the merels game to the Khitan, as they had been strong allies during the previous period (Wang 2018). After the establishment of the Khitan State, most regions previously controlled by the Uighur were integrated into the new Khitan territory. According to the *Liao shi* 辽史 history, Uighur merchants stayed in the Shangjing 上京 capital of the Liao Empire, as a Uighur Camp east of the south gate is mentioned (Tuo et al. 1974: 441). This was the place of various cultural exchanges.

The third scenario is that other Central Asian and West Asian merchants brought the merels board game to the Khitans through the grassland Silk Roads. During the reign of the First Emperor of the Liao Dynasty, Persians and Abbasids caliphates had diplomatic and commercial exchanges, such as trade caravans, with the Liao State (Su and Guanglin 1989). Whether it was transmitted to the Liao through Bohai, Uighurs, or Central Asian ethnic groups, the merels game was played in the Shangjing Upper Capital of the Liao Dynasty, as shown by the board discovered in the mausoleum complex of Liaozu. The merels board found in Changchunzhou and at the Yongping Temple site in Baicheng may be related to the seasonal nomadic hunting activity of the Liao court. During the reign of Emperor Shengzong 辽圣宗 (r. AD 982–1031), the Liao spring hunting camp (Chunnabo 春捺钵) was centered around Changchunzhou. Once a year, the Emperor and the imperial family, followed by all officials and a large number of soldiers, attendants, servants, as well as their families, set off from Shangjing to Changchunzhou in the spring for 2–3 months (Yang 2016). According to iconographic sources, the backgammon game was very common among the elites (Liang 2014), while the merels may rather have been played by soldiers, servants, and other members of the lower classes of society. This annual migration is likely to have been a transmission channel for the merels game to gradually spread to Changchunzhou and the nearby regions. In 1115, the Jurchen established the Jin State; ten years later, the Jin State definitively destroyed the Liao State and adopted a great part of its political and cultural characteristics. The merels game then further spread into the Northeast Plains and in the entire Jin Dynasty territory. The boards discovered in Tahucheng in northwestern Jilin, at the Baomacheng cultural complex in the Changbai Mountains in southeast Jilin, at the border fortress of the Jin Dynasty in Tongliao in eastern Inner Mongolia show the large spread of this game across the whole of Jin Dynasty territory.

The A-type rock carvings merels boards found in the Central Plains and the southeast coastal areas probably come from cultural, military, or commercial exchanges between the Song and the Liao (Fig. 6). There is much evidence of mutual influences between Khitan and Han in the historical archaeological records. For example, Han people of the Song Dynasty adopted the Khitan-style traveling water bottle (Wu 2005: 238–246). The Song shi 宋史 mentions the interdiction for the common people to imitate Liao style clothing and horse gear (Tuo et al. 1977: 3576), showing the existing influence of many fields of the Liao culture on Han material culture. In fact, after signing the Chanyuan 澶渊 Treaty in 1005, Song and Liao maintained a rather peaceful relationship for 120 years, which favored cultural exchanges and integration processes. The rock carving merels boards found in Lianyungang and the Central Plains could have been introduced through such cultural exchanges. After entering the Central Plains, the merels game continued to spread to the south of the country. The merels board of the Northern Song Dynasty discovered in the Longxing Temple site, in Qionglai, Sichuan province, is an example of the southward spread of this game.

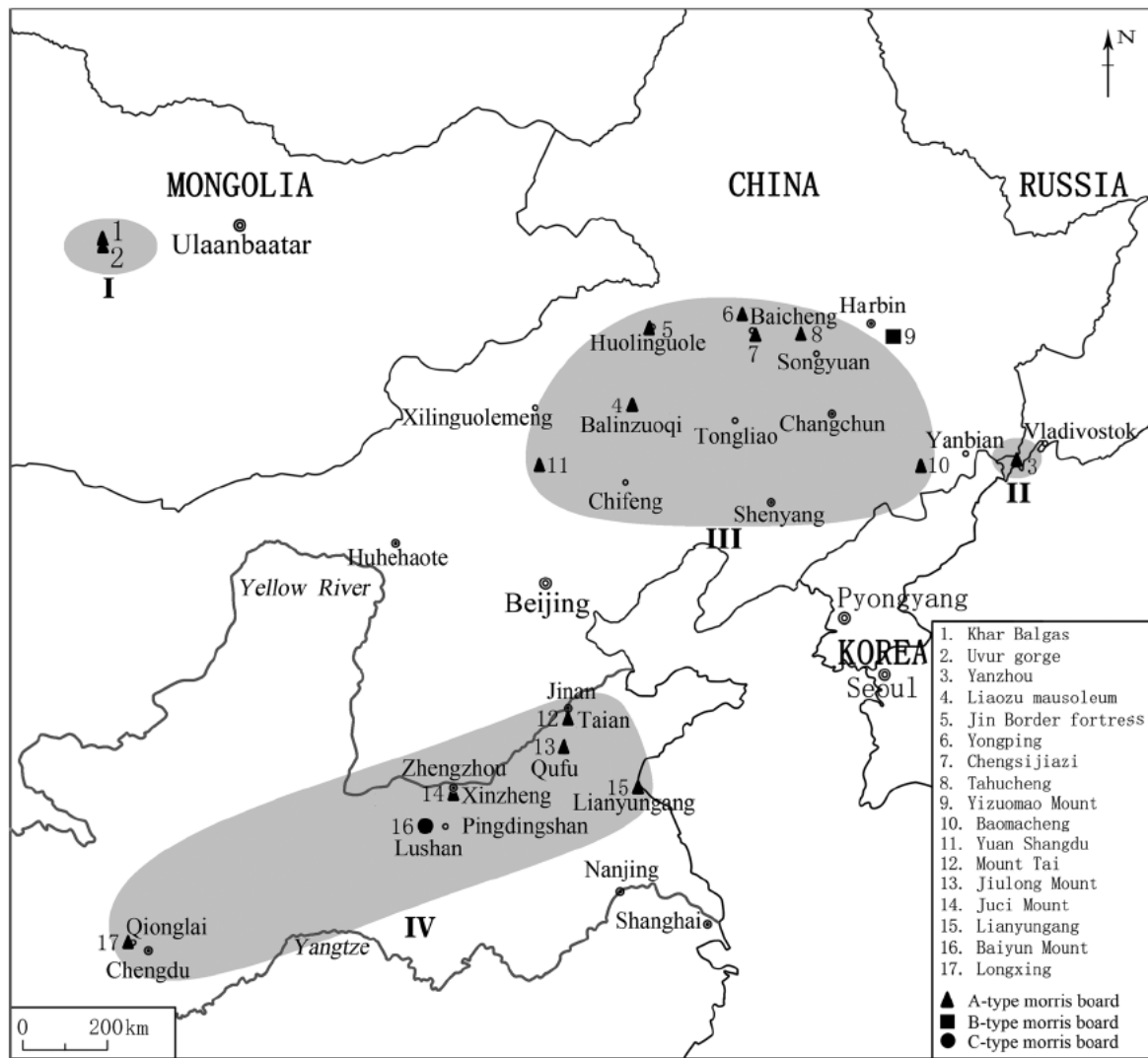


Fig. 6 Distribution map of merels boards in Mongolia and China. I. Uighur Khaganate (AD 8-ninth c.); II. Middle and late Bohai State (9-tenth c.); III. Liao, Jin, and Yuan Dynasties (10-fourteenth c.); IV. Song, Jin, and Yuan Dynasties (10-fourteenth c)

During the Ming Dynasty (1368–1644), the merels game became increasingly popular all over China. The Ming Dynasty writer, Xie Zhaozhe 谢肇淛 (AD 1567–1624), in his book entitled *Five Assorted Offerings* (*Wu za zu* 五杂俎), notes: “The common board games in the alley [...] include *ma cheng* 马城 [one of the merels game’s names], whether it is vertical or horizontal, it is shaped like a city, when three pieces are placed in a straight line, one can remove one of the opponent’s pieces from the board. Another rule is that when one’s piece is placed between the opponent’s two pieces or one’s two pieces is around the opponent’s one piece, one can remove the opponent’s pieces from the board” 委巷儿戏…… 马城, 不论纵横, 三子联则为城, 城成则飞食人一子. 它或夹或挑, 就近则食之, 不能飞食也 (Xie Xie 1959: 175). The *Five Assorted Offerings* is a notebook full of historical materials, which gathers a series of textual research and trivia stories (Che 2012). Although the shape of the *macheng* board is not described by Xie Zhaozhe, the rules are undoubtedly the ones of the merels game. Around the same period, Cheng Dayue, who was a scholar and famous ink maker, included a print of the auspicious image of “A Hundred Playing Children” (*Bai zi tu* 百子图) in his work *Cheng Shi Mo Yuan* 程氏墨苑. Among the numerous scenes composing this picture, one scene clearly depicts two children playing on an A-type board (Fig. 7) (Cheng 1996: 156). Thus, during the Ming Dynasty, this game was popular on the streets and played even by

children. A type merels is still popular in many regions of China today. The fact that it is easily built and played certainly contributed to its longevity among the popular board games in China.

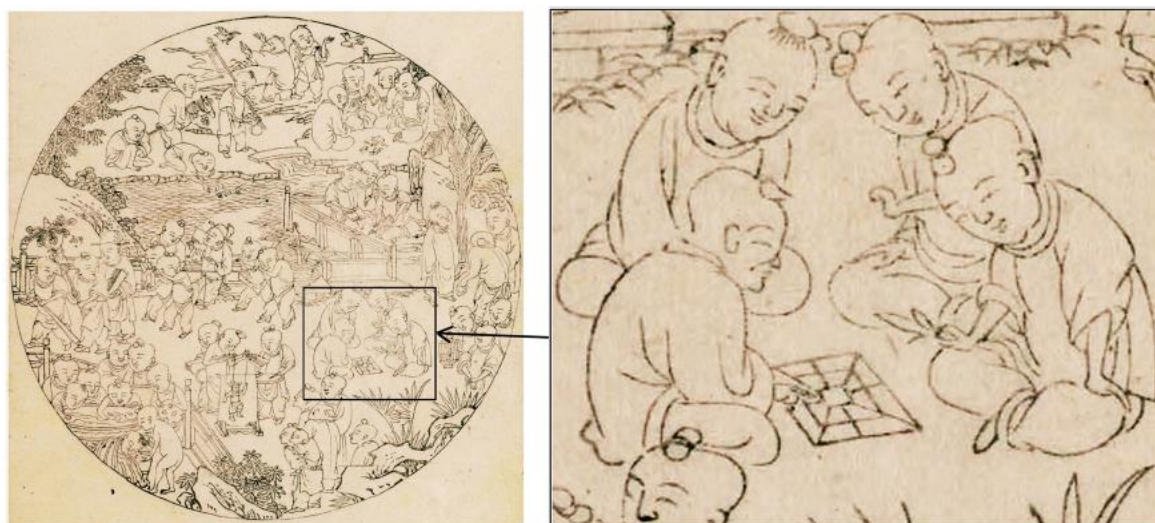


Fig. 7 The merels board in Cheng Dayue's "A Hundred Playing Children" of the Ming Dynasty (1368–1644) (after Cheng 1996: 156)

So far, there have been too few discoveries of B- and C type boards in China to ascertain their date. The question remains of whether these B- and C-types boards occurrences were direct importations or locally developed variations.

5 Conclusion

The relative rarity of research on the merels game, which is less mentioned in the transmitted text, is linked to the casual nature of this game compared to others (Bedon 1989: 61). A merels board can be drawn anywhere, not only on stone slabs or any discarded ceramic (architectural or pottery) objects but also simply on the dirt on the ground. It forces us to reconsider the function of the overwhelming number of "round potsherds" (*yuan taopian* 圆陶片) only named as such in archaeological reports in China and never studied, and lean toward the hypothesis that many of them might have been game pieces for which the board was ephemerally drawn on any convenient surface.

Three types of merels boards have been found in China, but the A-type boards constitute the vast majority of the findings. The A-type board unearthed from the Yanzhou City of the Bohai State is the earliest example within the Chinese cultural sphere. This game may have been introduced in northeast China through cultural exchanges with Sogdians, Uyghur, and other merchants through the Silk Roads. This game has spread throughout the Liao and Jin territories and A-type boards have been discovered in various contexts in northern and northeast China between the tenth and the thirteenth centuries. After the Chanyuan Treaty (1005), the relative peace in the border region between the Liao and the Northern Song might have favored economic and cultural exchanges, thus providing the conditions for many of the northern and northeast casual practices to be adopted and spread in Central China. By the end of the fourteenth c., during the Ming Dynasty, the A-type merels boards, by then known as the *macheng*, were very common among the popular urban culture. "Mind games usually spread rapidly and far away" (Depaulis 2018), the spread of the merels game all across Eurasia is an example of such wide cultural transmission.

Even though “games may seem an absurdly trivial domain for scholarly investigation” (Kurke 1999), board games work as social lubricants, facilitating interactions between people from different backgrounds (kinship, language, ethnicity, etc.) (Crist et al. 2016), the pattern of the merels game transmission to and inside Ancient China supports this concept. According to previous research on game transmission, it was found that games are transmitted with high fidelity, innovation does not depend on the complexity of the game, complex games are changed more gradually than simple ones, innovations take place when games cross boundaries, and transmission of games is not contingent on conquest (de Voogt et al. 2013). The case of the transmission of the merels game in Ancient China seems to fit these hypotheses.

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References

- Amores, Carredano Fernando. 2014. Tabulae lusoriae en Hispalis. *Gerion* 32: 251–270.
- Arbman, Holger. 1940. Der Arby-Fund. *Acta Archaeologica* 11: 43–102.
- Austin, Roland G. 1934. Roman board games. I. *Greece & Rome* 4 (10): 24–34.
- Bedon, Robert. 1989. Les jeux de société chez les Romains. *Archeologia* 246: 58–64.
- Bell, R.C. 1969. *Board and table games from many civilizations*. New York: Oxford University Press.
- Berger, Friedrich. 1999. “Spielbretter aus Bosra in Syrien”. *Mitteilungen der ANISA* 19/20: 23.
- Berger, Friedrich. 2004. From circle and square to the image of the world: A possible interpretation for some petroglyphs of merels boards. *Rock Art Research* 21 (1): 11–25.
- Bourgeois, Luc. 2001. Pièces de jeu et milieu aristocratique dans le Centre-Ouest de la France (Xe-XIIe siècles). *Aquitania* 18: 373–400.
- Bulkin V. I., et al. 2007. “Kelasiyino gu cheng zhi nei han jian de fa xian wu – Wa zhu qiang bi de xiaof ang 克拉斯基诺古城址内罕见的发现 物—瓦筑墙壁的小房 (a rare discovery in the ancient city site of Kraskino – Small houses with tiled walls).” In Yu Jianhua 于建华 (editor), *Dong bei ya kao gu zi liao yi wen ji* 东北亚考古资料译文集 (collected translations of northeast Asian archaeological materials), vol. 7, pp. 146–160. Harbin: Bei fang wen wu za zhi she.
- CASS 2016: Zhongguo she hui ke xue yuan kao gu yan jiu suo Neimenggu di er gong zuo dui 中国社会科学院考古研究所内蒙古第二工作队, et al. 2016. “Neimenggu Balinzuoqi Liao zu ling yi hao pei zang mu 内蒙古巴林左旗辽祖陵一号陪葬墓 (Liao zu mausoleum burial no. 1 in Balinzuoqi, Inner Mongolia).” *Kao gu* 考古 2016.10: 3–23.
- Che, Haitong 车海童. 2012. “Xie Zhaozhe yu Wu za zu 谢肇淛与《五杂俎》 (Xie Zhaozhe and the Five Assorted Offerings).” Master’s thesis, Inner Mongolia Normal University.
- Chen, Junmou 陈俊谋. 1987. “Shi lun Huihulu de kai tong ji qi dui Huihu de ying xiang 试论回鹘路的开通及其对回鹘的影响 (On the opening of the Uighur Road and its influence on Uighur).” *Zhong yang min zu xue yuan xue bao* 中央民族学院学报 1987.2: 25–29.

Cheng, Dayue 程大约. 1996. *Cheng shi mo yuan* (Ming) 程氏墨苑(明) (Cheng's ink garden [Ming dynasty]). Shijiazhuang: Hebei mei shu chu ban she.

Chengdu 2011: Chengdu wen wu kao gu yan jiu suo 成都文物考古研究所, et al. 2011. *Sichuan Qionglai Longxingsi 2005–2006 nian kao gu fa jue bao gao* 四川邛崃龙兴寺 2005–2006 年考古发掘报告 2005–2006 archaeological excavation report of Longxing temple in Qionglai, Sichuan). Beijing: Wen wu chu ban she.

Crist, Walter, Alex de Voogt, and Anne-Elizabeth Dunn-Vaturi. 2016. Facilitating interaction: Board games as social lubricants in the ancient near east. *Oxford Journal of Archaeology* 35 (2): 179–196.

de Voogt, Alex, Anne-Elizabeth Dunn-Vaturi, and Jelmer W. Eerkens. 2013. Cultural transmission in the ancient near east: Twenty squares and fifty-eight holes. *Journal of Archaeological Science* 40 (4): 1715–1730.

Depaulis, Thierry. 2018. Ancient American board games, I: From Teotihuacan to the Great Plains. *Board Game Studies Journal* 12 (1): 29–55.

U. Erdenebat (Эрдэнэбат У.), et al. 2012. “Харбалгаснаас олдсон х л г т тоглоом (A board game found in Khar balgas).” *Mongolian Journal of Anthropology, Archaeology and Ethnology* 7 (1): 114–134.

Falkener, Edward. 1892. *Games ancient and oriental, and how to play them: Being the games of the Greek, the Ludus Latrunculorum of the romans and the oriental games of chess, draughts, backgammon and magic squares*. London: Longmans, Green and Company.

Feng, Yongqian 冯永谦 and Deng, Xuebao 邓学宝. 1983. “Liaoning Jianchang pu cha zhong fa xian de zhong yao wen wu 辽宁建昌普查中发现的重要文物 (Important cultural relics discovered during a survey in Jianchang, Liaoning).” *Wen wu* 文物 1983.9: 66–72.

Gao, Wei 高伟. 2009. *Dongfang gu xingxiang yanhua yanjiu* 东方古星象岩画研究 (study on the ancient astrological rock carvings in eastern China). Nanjing: Nanjing da xue chu ban she.

Gomme, Alice B. 1964. *The traditional games of England, Scotland, and Ireland*. New York: Dover Publications.

Guo, Jia 2011: Guo jia wen wu ju 国家文物局. 2011. *2010 Zhongguo Zhong yao kao gu fa xian* 2010 中国重要考古发现 2010 (important archaeological discoveries in China 2010). Beijing: Wen wu chu ban she.

Han, Feng 韩锋 and Na, Haizhou 那海洲. 2010. “Heilongjiang sheng Harbin shi Acheng qu fa xian Han dai bo ju tu shi ke 黑龙江省哈尔滨市阿城区发现汉代博局图石刻 (A stone carving board game of bo ju from the Han Dynasty discovered in Acheng District, Harbin, Heilongjiang Province).” *Bei fang wen wu* 北方文物 2010.4: 40–51.

Hao, Yansheng 郝延省, et al. 2014. “Menggu zu ji ri ge qi xi kao shi 蒙古族吉日格棋戏考释 (a study on the Mongolian board game—Jirige).” *Ti yu wen hua dao kan* 体育文化导刊 2014.8: 65–68.

Huang, Ruxuan 黄儒宣. 2010. “Liu bo qi ju de yan bian 六博棋局的演变 (The evolution of the Liu bo board game).” *Zhong yuan wen wu* 中原文物 2010.1: 52–60.

Huo, Wei 霍巍 and Zhao, Qiwang 赵其旺. 2019. “Liaoning Chaoyang Huanghe lu tang mu shi yong zu shu kao 辽宁朝阳黄河路唐墓石俑族属考 (a study of the clan of the stone figures of the tang dynasty tombs on Huanghe road, Chaoyang, Liaoning).” *She hui ke xue zhan xian* 社会科学战线 2019.6: 147–155.

Ivliev, A.L., et al. 2012. *Kelasijino gu cheng yi zhi he bin hai di qu Bohai de kao gu xue yan jiu* 克拉斯基诺古城遗址和滨海地区渤海的考古学研究 (archaeological research

on the ancient city of Kraskino and the Bohai state in the coastal area in Russia). *Bei fang wen wu* 北方文物 2012 (1): 105–112.

Jilin 2013. *Jilin sheng wen wu kao gu yan jiu suo* 吉林省文物考古研究所, et al. 2013. *Eluosi bin hai bian jiang qu Bohai wen wu ji cui* 俄罗斯滨海边疆区渤海文物集粹 (the collection of cultural relics of Bohai state in Russia's coastal frontier). Beijing: Wen wu chu ban she.

Jilin 2016: *Jilin sheng wen wu kao gu yan jiu suo*, et al. 2016. *Baicheng Yongping Liao Jin yi zhi 2009–2020 nian du fa jue bao gao* 白城永平 辽金遗址 2009–2010 年度发掘报告 (2009–2010 excavation report of the Liao-Jin Yongping site in Baicheng). Beijing: Ke xue chu ban she.

Jilin 2017: *Jilin sheng wen wu kao gu yan jiu suo*, et al. 2017. *Qianguo Tahucheng 2000 nian kao gu fa jue bao gao* 前郭塔虎城 2000 年考古 发掘报告 (report on the 2000 archaeological excavation on the Tahucheng site in Qianguo). Beijing: Ke xue chu ban she.

Kiselyov, C.B., et al. 2016. *Gu dai Menggu cheng shi* 古代蒙古城市 (ancient Mongolian cities). Beijing: Shang wu yin shu guan.

Kleiss, Wolfram. 1979. *Bastam I: Ausgrabungen in den Urartäischen Anlagen 1972–1975*. Berlin: Mann Verlag.

Kurke, Leslie. 1999. *Ancient Greek board games and how to play them*. *Classical Philology* 94: 247–267.

Li, Ling 李零. 2011. “Zhongguo zui zao de ‘sheng guan tu’ – shuo Kongjiapo Han jian Ri shu de ‘ju guan tu’ ji xiang guan cai liao 中国最早的‘升官图’——说孔家坡汉简《日书》的‘居官图’及相关材料 (The earliest ‘sheng guan tu’ board game in China—About the ‘ju guan tu’ in the Kongjiapo Han bamboo slips Ri shu and related materials).” *Wen wu* 文物 2011.5: 68–79.

Liang, Shudan 梁姝丹. 2014. “Liaoning Zhangwu chu tu de Liao dai shuang lu qi 辽宁彰武出土的辽代双陆棋 (Liao dynasty backgammon discovered in Zhangwu, Liaoning).” *Dong bei shi di* 东北史地 2014.1: 20–22.

Murray, Harold J.R. 1969. *A history of chess*. Oxford: Clarendon Press.

Murray, Harold J. R. 1978 (1952). *A history of board-games other than chess*. Oxford: Clarendon Press.

Neimenggu 2014: *Neimenggu shi fan da xue* 内蒙古师范大学, et al. 2014. “Neimenggu Xilinguole Yuan Shangdu cheng zhi que shi gong dian ji zhi fa jue jian bao 内蒙古锡林郭勒元上都城址阙式宫殿基址发掘简报 (brief report on excavation of the base of que-style palace in Yuan Shangdu, Xilinguole, Inner Mongolia).” *Wen wu* 2014.4: 45–57.

Nicolaysen, Nicolay. 1882. *Langskibet fra Gokstad ved Sandeffjord* (the Viking ship discovered at Gokstad in Norway). Chistiana, Alb. Cammermeyer.

Peng, Shanguo 彭善国. 2015. “Jilin Qianguo Tahucheng wei Jin dai Zhaozhou xin zheng 吉林前郭塔虎城为金代肇州新证 (new evidence on the Tahucheng site in Qianguo, Jilin province, corresponding to the Zhaozhou of the Jin dynasty).” *She hui ke xue zhan xian* 社会科学战线 2015.10: 122–129.

Rong, Xinjiang 荣新江. 2001. *Zhong gu Zhongguo yu wai lai wen ming* 中古中国与外来文明 (medieval China and foreign civilizations). Beijing: Sheng huo du shu xin zhi san lian shu dian.

Roueché, Charlotte and Chaisemartin, Nathalie de. 1993. Performers and partisans at Aphrodisias in the Roman and late Roman periods: A study based on inscriptions from the current excavations at Aphrodisias in Caria. *Journal of Roman studies monograph*. London: Society for the Promotion of Roman Studies.

Ryan, W.F. 2008. Games, pastimes and magic in Russia. *Folklore* 119 (1): 1–13.

- Schädler, Ulrich. 1998. Mancala in Roamn Asia Minor. *Board Game Studies* 1: 10–25.
- Schädler, Ulrich and Dunn-Vaturi, Anne-Elizabeth. 2016. “Board Games in pre-Islamic Persia”, in *Encyclopædia Iranica*, 2016, vol. online edition. Accessed June 23, 2020. <http://www.iranicaonline.org/articles/board-games-in-pre-islamic-persia>.
- Shao, Qinglong 邵清隆. 1984. “Neimenggu Huolinhe kuang qu Jin dai jie hao bian bao yi zhi fa jue bao gao 内蒙古霍林河矿区金代界壕边堡发掘报告 (Excavation report of the boundary fort of the Jin Dynasty in Huolinhe Mining Area, Inner Mongolia).” *Kao gu* 考古 1984. 2: 157–174.
- Shavkunov, E. V. 2017. “Dong bei ya min zu li shi shang de Sute ren yu hei diao zhi lu 东北亚民族历史上的粟特人与黑貂之路 (the Sogdian and black sable road in the history of northeast Asian ethnic groups).” *Guangxi min zu da xue xue bao* 广西民族大学学报 2017.5: 20–24.
- Song, Dehui 宋德辉. 2009. “Chengsijiazi gu cheng wei Liao dai Changchunzhou Jin dai Xintaizhou 城四家子古城为辽代长春州金代 新泰州 (the ancient city site of Chengsijiazi corresponds to the Changchunzhou during of the Liao dynasty and to the Xintaizhou of the Jin dynasty).” *Bei fang wen wu* 北方文物 2009.2: 92–95.
- Song, Xiulan 宋秀兰. 2012. “Qianxi Jucishan yan hua zhong de fang xing wang ge yan ke 浅析具茨山岩画中的方形网格岩刻 (a brief analysis of the grid pattern rock carvings in the JuciMountain).” In LiuWuyi 刘 五一(editor), *Zhongyuan yan hua* 中原岩画 (rock paintings in the Central Plains), pp. 172–175. Zhengzhou: Zhongzhou gu ji chu ban she.
- Stephens, George R. 1937. A medieval game in use today. *Speculum* 12 (2): 264–267.
- Su, Bai 宿白. 2012. *Kao gu fa xian yu Zhong-Xi wen hua jiao liu* 考古发现 与中西文化交流 (archaeological discoveries and cultural exchanges between China and the west). Beijing: Wen wu chu ban she.
- Su, He 苏赫 and Tian Guanglin 田广林. 1989. “Caoyuan Si chou zhi lu yu Liao dai Zhong-Xi jiao tong 草原丝绸之路与辽代中西交通 (The grassland Silk Roads and transportation between China and the West during the Liao Dynasty).” *Zhaowuda Meng zu shi zhuan xue bao* 昭乌达蒙族师专学报 1989.4: 1–11.
- Tan, Qixiang 谭其骧. 1996a. *Zhongguo li shi di tu ji* 中国历史地图集 (Chinese history atlas), vol. 5. Beijing: Zhongguo di tu chu ban she.
- Tan Qixiang. 1996b. *Zhongguo li shi di tu ji* 中国历史地图集 (Chinese history atlas), vol. 6. Beijing: Zhongguo di tu chu ban she.
- The Editors of *Encyclopaedia Britannica*. 2019. “Merels” <https://www.britannica.com/topic/Nine-Mens-Morris>, accessed July 20, 2019.
- Tuo Tuo 脱脱, et al. 1974. *Liao shi* 辽史 (Liao history). Beijing: Zhong hua shu ju.
- Tuo Tuo 脱脱, et al. 1977. *Song shi* 宋史 (Song history). Beijing: Zhong hua shu ju.
- Wang, Yanli 王艳丽. 2018. “Qian xi Huihu yu Qidan de guan xi 浅析回鹘 与契丹的关系(a brief analysis of the relationship betweenUighur and Khitan).” *Wen wu jian ding yu jian shang* 文物鉴定与鉴赏 2018.17: 60–61.
- Wu, Lan 吴岚. 2000. “Menggu zu ‘ji ri ge’ qi xi 蒙古族‘吉日格’棋戏(The Mongolian board game—jirige).” *Neimenggu wen wu kao gu* 内蒙古 文物考古 2000.2: 98–103.
- Wu, Jing 吴敬. 2005. “Cong mu zang bi hua kan Liao dai Qidan yi zhang 从墓葬壁画看辽代契丹仪仗 (Khitan ceremony in Liao dynasty viewed from the tomb murals).” *Bian jiang kao gu yan jiu* 边疆考古研究 4: 238–246.

Wu, Song 武松. 2019. *Bohai wen hua lai yuan yan jiu - yi kao gu zi liao wei zhong xin* 渤海文化来源研究——以考古资料为中心 (study on the origins of the Bohai culture—Focusing on archaeological remains). Ph.D. dissertation, Jilin University.

Xie, Zhaozhe 谢肇淛. 1959. *Wu za zu* (Ming) 五杂组卷六(明) (five assorted offerings), vol.6. Beijing: Zhonghua shu ju.

Xu, Jialiang 徐家亮. 1997. *Zhongguo gu dai qi yi* 中国古代棋艺 (ancient board games in China). Beijing: Shang wu yin shu guan.

Xu, Xiyun 徐希燕. 2001. *Mo xue yan jiu: Mozi xue shuo de xian dai quan shi* 墨学研究: 墨子学说的现代诠释 (study on Mencius philosophy: Modern annotations of Mencian theory). Beijing: Shang wu yin shu guan.

Yang, Jun 杨军. 2016. “Liao dai Nabo san ti 辽代捺钵三题 (three questions on the Nabo during the Liao dynasty).” *Shi xue ji kan* 史学集刊 2016.3: 147–154.

Ye, Shuai 叶帅. 2018. “Jin dai bo yi huo dong de chu bu yan jiu – Yi kao gu zi liao wei zhong xin 金代博弈活动的初步研究——以考古材料为中心 (a preliminary study on the board game activities of the Jin dynasty—Focusing on archaeological materials).” *Heilongjiang min zu cong kan* 黑龙江民族丛刊 2018.4: 61–67.

Zhang, Jiaxin 张嘉馨. 2018. “Yan hua yan jiu zhong de duan dai wen ti - yi Jiangjunya yan hua de nian dai yan jiu wei li 岩画研究中的断代问题 ——以将军崖岩画的年代研究为例 (The problem of rock carving dating: A case study on the date of the Jiangjunya cliff rock carvings).” *Zhong yang min zu da xue xue bao* 中央民族大学学报 2018.5: 69–77.

Zhang, Mengna 张梦纳, et al. 2016. “Jilin Antu Baomacheng yi zhi you huo fa xian 吉林安图宝马城遗址又获发现 (new discoveries at the Baomacheng site in Antu, Jilin).” *Zhongguo wen wu bao* 中国文物报 2016.1: 15.

Zhao, Junjie 赵俊杰. 2015. “Guan yu Baomacheng xing zhi de chu bu yan jiu 关于宝马城性质的初步研究 (A preliminary study on the nature of the Baomacheng site).” *Bei fang wen wu* 北方文物 2015. 3: 34–37.

Zhong, Jiji 仲几吉. 2010. “Xiang shu fu Hao yu shang gu yan hua Zhong de wang ge tu an chu tan 象数符号与上古岩画中的网格图案初探 (a preliminary study on symbol for recording the astronomical calendar and grid pattern in ancient rock painting).” *Dong nan wen hua* 东南文化 2010.1: 106–111.

Zhou, Weizhong 周伟中. 2009. *Qi lei you xi 100 zhong* 棋类游戏 100 种 (100 kinds of board games). Beijing: Ren min ti yu chu ban she.