Letterjongg! Featuring Historical Fonts Using Casual Games

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ABSTRACT: Originally developed in 1981 by physicist and game designer Brodie Lockard on a mainframe computer at the University of Illinois, Mah-Jongg gained widespread popularity after being released by U.S. game publisher Activision under the name Shanghai. Building on this legacy, the browser-based game Letterjongg reimagines the classic tile-matching format through the lens of Western typographic history. Letterjongg features letterforms based on the work of Francesco Griffo (1450–1518), a Bolognese punchcutter who created the first italic typeface in history. The characters are sourced from the 1501 edition of Horace's complete works, published by Venetian humanist Aldus Manutius, and have been digitized in high resolution by the University of Basel. By replacing traditional Far Eastern iconography with Renaissance-era Western typography, Letterjongg offers a distinctive cultural reinterpretation of the classic game—inviting players on a journey back to the origins of modern font design and book printing.

1. INTRODUCTION

In 1981, Brodie Lockard, a student at Stanford University, developed a computer game two years after sustaining a severe spinal cord injury during a gymnastics accident, which resulted in quadriplegia. During his extended hospitalization and rehabilitation, Lockard—unable to operate a conventional keyboard and using a mouth-stick instead—was granted access to a PLATO terminal. PLATO (Programmed Logic for Automatic Teaching Operations) was the first generalized computer-assisted instruction system, originally designed and implemented by the University of Illinois. [1]

The computer game that Lockard began developing on the PLATO system was a single-player puzzle game featuring representations of traditional Chinese *Mah-Jongg* tiles. These tiles, originally used in the Chinese multi-player game *Mah-Jongg*, had gained considerable popularity in the United States by that time. Reflecting the visual elements, Lockard entitled his game *Mah-Jongg* accordingly. In 1986, the software company Activision released a commercial version of it under the title *Shanghai*. Subsequently, in 1990, Microsoft included another variant—renamed *Taipei* for legal reasons—in its Windows Entertainment Pack for the Windows 3.x operating system.

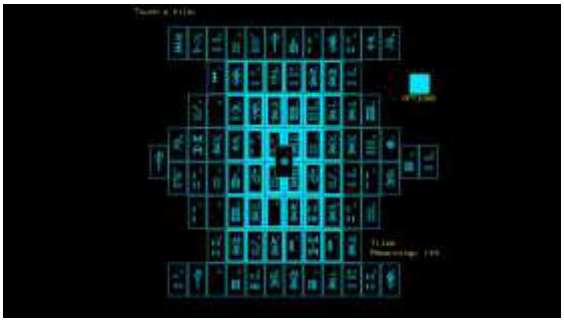

Figure 1: *The original "Mah-jongg" game running on the PLATO system, screenshot (own work).*

Figure 2: *"Taipei" for Microsoft Windows 3.1, screenshot (own work).*

This inclusion significantly contributed to the widespread dissemination and popularity of *Mah-Jongg*, establishing it as one of the most widely played computer games globally.

2. INTERACTIVITY

Humans have engaged in gameplay for millennia, encompassing a wide range of forms such as dice games, board games, card games, and, more recently, digital games on consoles, computers, and mobile devices. Despite the technological evolution of these formats, games consistently function as narrative systems, structures through which stories are conveyed. In this regard, they share fundamental characteristics with traditional narrative media such as literature, theater, and film. The primary distinguishing feature of games, however, is their interactivity: the players' ability to influence the progression of the narrative through their decisions and actions. [2]

Interactivity is one of the key reasons games serve as effective tools for both visualizing cultural data and promoting user engagement with such content. It is no coincidence that game development has become a prominent medium within collaborative creative contexts such as hackathons. A hackathon is an intensive, time-bound event—typically lasting between one and three days—during which programmers, ideally in collaboration with researchers, designers, and museum professionals, develop prototype applications. These projects are predominantly software-based and are frequently made publicly accessible and documented on specialized online platforms in order to facilitate further development, dissemination, and scholarly evaluation.

3. HACKATHON

Hackathons such as the Swiss Open Cultural Data Hackathon generate impact across multiple dimensions. These events foster experimentation and innovation by providing a structured yet flexible environment for creative exploration. Interdisciplinary collaboration—bringing together specialists from fields such as software development, cultural heritage, data science, arts, and design—enhances the knowledge base and perspectives of all the participants. Moreover, the prototypes developed during these events often serve as valuable tools for engaging diverse audiences, including user groups that cultural institutions or data providers might not otherwise reach through conventional channels. [3]

4. LETTERJONGG

Letterjongg [4] was developed during the 4th Swiss Open Cultural Data Hackathon, held at the Swiss National Museum in Zurich in October 2018. [5] The online game seeks to reinterpret the traditional visual language of East Asian *Mah-Jongg* imagery through the lens of European Renaissance typography. 570 years ago, the invention of modern printing technology by Johannes Gutenberg in Germany—and subsequently by William Caxton in England two decades later—marked a profound technological and cultural shift. Prior to this development, books were manually produced manuscripts, meticulously written and copied by scribes over extended periods of time. The advent of movable type and associated printing techniques enabled the mass production of texts at unprecedented speed and scale. This innovation had a transformative impact on both scientific knowledge dissemination and societal development in general.

Fifteenth-century typographers were not only entrepreneurs; they were also artists, and this dual role is evident in the aesthetic qualities of early printed typefaces. The design of 15th- and 16th-century fonts retain strong influences from their calligraphic predecessors, reflecting the typographers' training in manuscript traditions. Although produced using novel printing technologies, early printed books were still conceived as valuable cultural artifacts—objects of both intellectual and artistic significance. Many were adorned with elaborate illustrations and decorative elements. For example, incunabula (books printed before 1500) often feature a blank space in the upper left corner of a page, deliberately left for the later hand-illustration of ornamental initials, thus preserving the integration of manual artistry within the mechanical reproduction process.

Letterjongg contains 144 typographic tiles, corresponding to 36 distinct tile faces. The letterforms were extracted from a high-resolution scan (TIFF format; 2,576×4,840 pixels; file size: 35.69 MB) of a single page of Horace's (*Horatius Flaccus*) complete works, provided by the University of Basel. [6] The volume was published in 1501 by Aldus Pius Manutius (Aldo Pio Minuzio) in Venice, with type design by Francesco Griffo, a renowned font designer and punchcutter in Bologna. While the game mechanics of *Letterjongg* have been slightly simplified, its gameplay remains cognitively

demanding, due to the randomized arrangement of tiles—resulting in some configurations that may be unsolvable—and the high degree of visual similarity among the tiles which challenges the players' pattern recognition and spatial orientation.

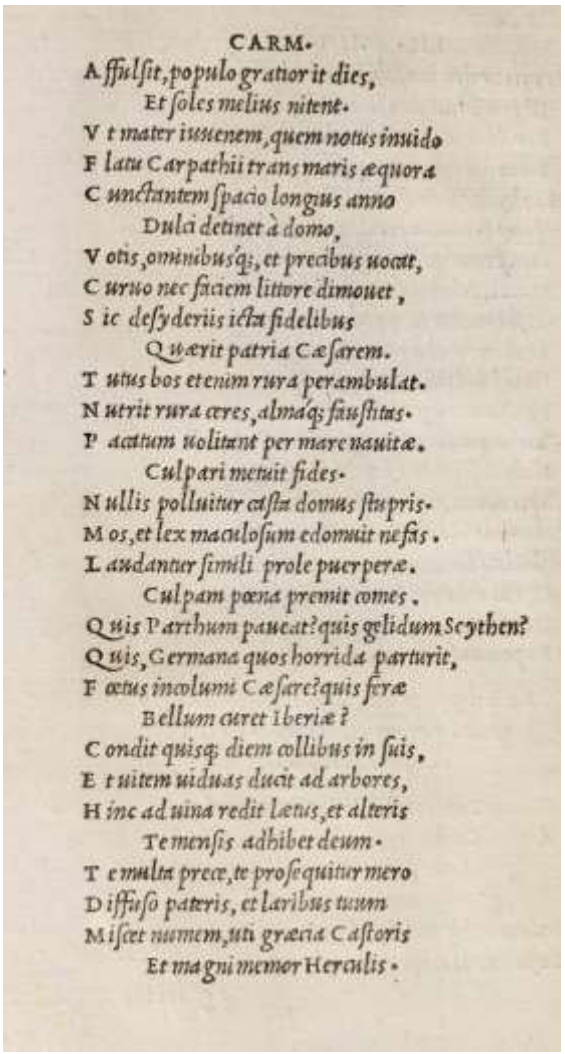
CARM.
Affulſit, populo gratior it dies,
Et ſoles melius nitent.
Vt mater iuuenem, quem notus inuido
Latu Carpathii trans maris æquora
Cunctantem ſpacio longius anno
Dulci detinet à domo,
Votis, omnibuſq;, et precibus uocat,
Curuo nec faciem littore dimouet,
Sic deſyderiis icta fidelibus
Quærit patria Cæſarem.
Tutus bos etenim rura perambulat.
Nutrit rura ceres, almáq; fauſtitas.
Pacatum uolitant per mare nauitæ.
Culpari metuit fides.
Nullis polluitur caſta domus ſtupris.
Mos, et lex maculoſum edomuit nefas.
Laudantur ſimili prole puerperæ.
Culpam pœna premit comes.
Quis Parthum paueat? quis gelidum Scythen?
Quis, Germana quos horrida parturit,
Fœtus incolumi Cæſare? quis feræ
Bellum curet Iberiæ?
Condit quiſq; diem collibus in ſuis,
Et uitem uiduas ducit ad arbores,
Hinc ad uina redit lætus, et alteris
Temenſis adhibet deum.
Te multa prece, te proſequitur mero
Diffuſo pateris, et laribus tuum
Miſcet numem, uti græcia Caſtoris
Et magni memor Herculis.

Figure 3: *High-resolution scan of a page from Horace's complete works issued by Aldus Pius Manutius, Venice (1501). (University of Basel)*

While Francesco Griffo engraved the capital letters in a normal (upright) style, the lowercase letters were cut in an italic form. These so-called *Aldines*—named after Aldus Pius Manutius, the Venetian editor and printer who commissioned the typeface—introduced the first italic letterforms in the history of printing [7]. This typographic innovation played a significant role in the Renaissance revival of classical antiquity and contributed to the intellectual movement of humanism. Griffo's typeface, designed specifically for Aldus' editions of classical Latin texts, proved to be influential in shaping the visual culture of early modern Europe. Notably, because the cursive type originated in Italy, such letterforms are still referred to as *italics* in present-day English. [8]

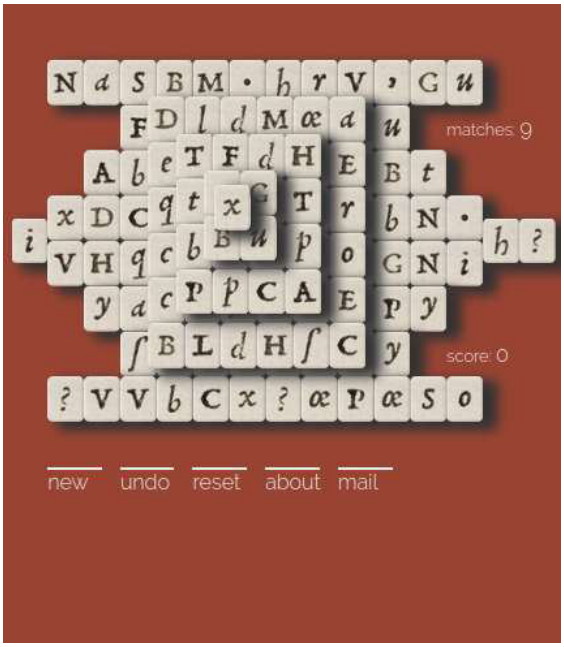

Figure 4: *Online game "Letterjongg", screenshot (own work).*

Letterjongg is coded in HTML 5 (CSS 3, Javascript); no external frameworks or libraries were used. It can be disseminated via a direct web link or through a scannable QR code, thus facilitating broad and low-threshold access.

5. CONCLUSION

Computer games—and online games in particular—offer a highly effective medium for the dissemination of cultural and historical data, while encouraging users to engage with content beyond the temporal and spatial limits of an exhibition. The use of browser-based technologies facilitates low-barrier access and broad distribution. This approach transforms cultural datasets into interactive experiences that visitors can continue to explore after their physical exhibition visit. In doing so, online games extend the museum experience and contribute to a more sustainable and meaningful engagement with scientific, cultural, or historical content.

6. REFERENCES

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