The Lived Space of Computer Games

Stephan Günzel

Henri Lefebvre and the Spatial Turn

Since the late 1980s, a "spatial turn" has affected the arts and humanities, and in particular, cultural studies. This also extends to computer game studies—one could even assert they had involved analyzing the spatiality of digital games from the very beginning.[1] To understand this new approach, it is crucial to examine the origin of current debates about the spatial turn. This can be traced back to 1974, with the publication of Henri Lefebvre's (1901-1991) book *La production de l'espace*. It took almost two decades to recognize his spatial account of culture; but once his book was translated into English, neo-Marxist and postmodern theorists began to discover the relevance of a spatial approach to sociology and urban studies.[2]

Lefebvre's thoughts were finally introduced to a broader audience when the geographer Edward Soja (1940-2015) published his reading of *The Production of Space*.[3] The monograph was a follow-up to Soja's publica-

1 | Stephan Günzel, "The Spatial Turn in Computer Game Studies," *Exploring the Edges of Gaming: Proceedings of the Vienna Games Conference 2008-2009—Future and Reality of Gaming*, ed. Konstantin Mitgutsch, Christoph Klimmt and Herbert Rosenstingl (Vienna: Braumüller, 2010), pp. 147–56.

2 | Henri Lefebvre, *The Production of Space* [1974] (Oxford/Cambridge MA: Blackwell, 1991).

3 | Edward W. Soja, *Thirdspace: Journeys to Los Angeles and Other Real-and-Imagined Places* (Oxford/Cambridge MA: Blackwell, 1996), pp. 53–82.

tion *Postmodern Geographies*, in which the term "spatial turn"[4] was coined for the first time (diagnosing the turn of Western Marxism towards spatial aspects of culture). As the title of this successive book, *Thirdspace*, suggests, with Lefebvre, Soja calls for an understanding of society as a synthesis of two spaces.

The reason why Lefebvre insisted on the existence of a third realm, or "space," is because he asserted that production can take place at any of three possible stages. Physical space, the first realm, is as produced as the second realm of imaginations: landscapes are a reworked form of "second nature," and social or architectural utopias are manmade ideas. Both stand in a dialectical relation to one another, and the outcome of their concurrence is social space. Therefore, Soja subsequently referred to cultures as "thirdspaces"—a term originally coined in postcolonial studies[5]—to denote spaces that are "real-and-imagined places" alike.

Fig. 71: Triad of Space according to Lefebvre and Soja

Spaces	Forms	Modalities	Equivalents
1st	**Spatial practice** [*pratique spatiale*]	**perceived** [*espace perçu*]	subjective | real everyday live/nature
2nd	**Representations of space** [*représentations de l'espace*]	**conceived** [*espace conçu*]	objective □ imaginary urbanism/cartography
3rd	**Representational spaces** [*espaces de représentation*]	**lived** [*espace vécu*]	collective □ symbolic lifeworld/culture

Extending Lefebvre's idea of a dialectical production of space, Soja speaks of a "trialectics of spatiality," and this is for at least two reasons. The first is that the results of the imaginary (re)production of physical space as culture feeds back into the first (as well as the second) kind of space. In this, the first space is affected by the third (and the second). The other reason is

4 | Edward W. Soja, *Postmodern Geographies: The Reassertion of Space in Critical Social Theory* (London/New York NY: Verso, 1989), p. 39.

5 | Homi Bhabha, "The Third Space: Interview," *Identity: Community, Culture, Difference*, ed. Jonathan Rutherford (London: Lawrence&Wishart, 1990), pp. 207–221, here p. 211.

that Lefebvre describes each of the spaces as "two-fold," hence as dialectical in and of themselves.[6]

Production of space on the first level takes place as an everyday spatial practice, in which space is not only acted out or performed, but simultaneously, it is individually perceived: this describes the *phenomenology* of space. Production of space on the second level takes place due to the representation of (perceived) space in architecture, geography, urbanism, and so forth, but is also objectively conceived: this describes the *epistemology* of space. Production on the third level takes place as the constitution of "representational spaces" (as Lefebvre calls them) or "spaces of representation" (as Soja calls them), i.e. *culturally significant places*. These places are significant due to their collective production as an interpretation, or a collective reproduction as preservation of certain traditions; Lefebvre refers to both of these as "lived space."

Lefebvre's (and Soja's) triad of space has become very popular in recent discussions and has been used to describe the various modes of cultural production. However, there is significant confusion about the model. This is not only due to the third term, the "lived space," which is hard to separate from the "spatial practices" of the first level (indeed, this confusion was Lefebvre's intention, as he did not want space to be conceptualized as static, but rather, as a process). Confusion also resulted from the fact that the second and the third space are both denoted as "representations." This duplication, or bifurcation, is particularly useful in re-examining the medium in question: computer games.

Lefebvre and Space in Game Studies

In computer games studies, Lefebvre's approach was used shortly after Soja's reading in 1996. In a paper entitled *Allegories of Space*, which was initially published online in 1998, the Norwegian hypertext-theorist Espen Aarseth (*1965) referred to Henri Lefebvre, making him first to mention the theory of spatial production in regard to games. In his text,

6 | *Dialectics*—based on the Greek word *logos* for spirit, speech, or meaning—does not literally designate a movement between only "two," since the prefix is derived from *dia-* meaning "through" and not from *di-*; "tri-alectics," as Soja names the process, is therefore almost a nonsensical term.

Espen Aarseth utilizes the popular reading of the three forms of space as the physical, the abstract, and the social.[7] In doing so, Aarseth claims that the spatial practice of games—i.e. the first space as (simulated) *physical space*—is derived from a relational space of navigation—i.e. the second space as (imaginary) *abstract space*—as well as from what Aarseth calls an "aesthetic space"—i.e. the third space as (conventional) *symbolic space*. Thus, according to Aarseth, games are allegorical representations of space. In other words, they are metaphors of space, and not space itself. "Representation," again, refers to an incomplete copy or an ontologically deviant "image" of the real world. It is "only" a representation; games can never depict space as it is perceived, completely, as it exists "in real life."

Since Aarseth's article on game space, Lefebvre's triad of space has been used frequently in game studies—notably, without following Aarseth's interpretation. The first further instance is a paper on *Virtual Real(i)ties* by Shawn Miklaucic, who discusses *SimCity* (1989) as a quite negative example of second space, i.e. as an abstract space, or the representation of space. In his perspective, the representation dominates the first as well as the third space alike: there is no "lived" (or perceived) space in *SimCity*, only its (cartographic) representation.[8] Miklaucic uses the term "representation" in an ambiguous way, since he addresses both in-game representations and the game itself as an image. Furthermore, Miklaucic does not seem to be aware of the fact that, in *SimCity*, the first space is not a map at all, even though the game world is visible from a birds-eye view. A map exists in the game, too, but only as a miniature that represents the frame or cover of the first space; that is, the border between on-screen and off-screen space. On the contrary, the primary view is the first space of the game—the lived space of *SimCity*.

A second example is Axel Stockburger's dissertation, *The Rendered Arena*, in which the three modalities of space are used to differentiate

---

7 | Espen Aarseth, "Allegories of Space: The Question of Spatiality in Computer Games," *Cybertext Yearbook 2000*, ed. Markku Eskelinen and Raine Koskimaa (Jyväskylä: Research Centre for Contemporary Culture, 2001), pp. 152–171.

8 | Shawn Miklaucic, "Virtual Real(i)ty: SimCity and the Production of Urban Cyberspace (2001)," *Game Research: The Art, Business and Science of Computer Games* (2006), http://www.game-research.com/index.php/articles/virtual-reality-simcity-and-the-production-of-urban-cyberspace (accessed June 17, 2019).

between the physical medium of the game device(s)—the first space—the narrative as well as rule-based representations of space on the computer-screen—the second space—the realm, constituted by the players' kinesthetic actions—the third space.[9] Another author using Lefebvre's schema in a similar way is Michael Nitsche, in his 2008 book *Video Game Spaces*: Just like Stockburger two years before him, the representation of space is the visible space on screen, as a form of second space. However, Nitsche separates the rule-based space—which Stockburger includes in second space—and identifies it with the first space, as the set of rules underlying secondary visual space. "Representation" is thus understood as the visualization of otherwise invisible space. Like Aarseth, Nitsche takes into consideration the dialectic of aesthetics and knowledge (symbolic space and relational space in Aarseth), or fiction and rules, from which the spatial constitution of a particular game arises. And like Stockburger, Nitsche also incorporates the aspect of the social as a third space, claiming that the "thirdspace" is the "combination of fictional, play, and social spaces".[10]

As evident in these examples, Lefebvre's triad of space is a stimulating heuristic model for a rich description of computer games. And this is not to speak of the simple possibility of applying Lefebvre to his original subject-matter—urban space—which now is pervaded by virtual game space. Nevertheless, the next section provides another reading of Lefebvre in regard to computer game spaces, which is quite different from the ones mentioned above: games themselves as spatial concepts.

Representation as Denotation and Representation as Exemplification

Understanding games as spatial concepts requires a closer look at what a "representation" is (or could) be. Representation has a *semiotic* dimension,

9 | Axel Stockburger, *The Rendered Arena: Modalities of Space in Video and Computer Games*, unpublished PhD dissertation (London: University of the Arts, 2006), http://www.stockburger.at/files/2010/04/Stockburger_Phd.pdf (accessed June 17, 2019).

10 | Michael Nitsche, *Video Game Spaces: Image, Play, and Structure in 3D Games Worlds* (Cambridge MA/London: The MIT Press, 2008), p. 16.

beyond its *ideological* meaning, in which a representation is always suppressive and dogmatic, and besides an *ontological* understanding of representation as something that lacks reality or materiality. Indeed, Lefebvre himself, as previously indicated, seems to have had all three dimensions in mind: he refers to *phenomenological dialectics* (in respect to the ontologies of space: perceived, conceived, and lived) and *ideological dialectics* (in respect to the means of social reproduction: biology, knowledge, and culture), but also to *semiotic dialectics*: referencing the first space, in which the lived, cultural space feeds back into the individual perceived space. Lefebvre refers to this as the realm of "performance," or the sphere in which meaning is acted out. This idea was originally invented by John L. Austin (1911-1960), who insisted on differentiating between "performatives" and "constatives,"—both *how* something is said and *what* is being said (as the content of an utterance).[11]

Thus, the relationship between the first and second kind of space, in respect to semiotics, could be understood in the sense of Nitsche: as the dialectics between (rule-based) performance and (on-screen) representation. Still, the question remains: what is the difference between a representation in the second space and a representation in the third space, if not understood ideologically or ontologically? Semiotically, one could argue for two means of representation. An entire book by Nelson Goodman (1906-1998) was devoted to the problem of representation; in his lectures on *Languages of Art* from 1968, Goodman tried to outline a semiotic approach that avoids any ontological understanding of signs. In this, images as "mere representations" are no longer considered to "lack reality."

Goodman distinguishes between representation as "denotation" and representation as "exemplification," which are the two ways of using a sign in specific contexts. When *denotating* something, a term used to refer to an object or the "content" of the sign, it cannot be like what is referred to in respect to its appearance.[12] For example, most words humans use to designate objects have nothing in common with the object itself. Some onomatopoetic words may resemble an object, or an aspect of it: for example, sounds of animals used as common nouns for the species in question. But

11 | John L. Austin, *How to Do Things with Words* [1962] (Cambridge MA: Harvard University Press, 1975).

12 | Nelson Goodman, *Languages of Art: An Approach to a Theory of Symbols* [1968] (Indianapolis IN: Hackett, 1976), pp. 52–57.

such examples are rare; most words are symbolic, in the sense that they have nothing in common with the object.

Another means of representation, or representing something, is *exemplification*. In the act of exemplification, something is used to refer to another thing that possesses similar properties; or at least those characteristics relevant for the context in which referencing occurs. For example, when one goes to a hardware store to buy nails, one could ask for a certain type or nail by utilizing a proper noun—which would be an act of denotation. However, if one has forgotten the name or type of nail, one could just show a remaining nail in the package and ask the salesperson to hand out a(nother) one "of those."

Speaking in terms of diagrammatic topology, the nail presented as a sign for other nails belongs to a set of objects that share common properties, such as size or hardness. However, they might vary from one another in regard to color or brand. Thus, a denotation is an *asymmetrical* representation (the signifier does not share the properties of the signified), and an exemplification is a *symmetrical* representation (the signifier shares the properties of the signified).

Iconology of Space

With Goodman, it is possible to conceive computer games as more than just an allegory for physical space (or only as "metaphors"). As asymmetrical representations, in the sense of denotations, games do lack the "real-being" of space. Nevertheless, they are symmetrical representations of theories of space, i.e. *the game exemplifies a spatial concept*. With Lefebvre, this means taking into consideration representations of space not just as perceived representations of physical space, but also as conceived representations in relation to thirdspaces: culturally produced space, in which symmetrical and asymmetrical representations, together, constitute "symbolic" space, which is lived.

Thus, philosophies of space are—in Lefebvre's schema—not only located on the conceptual level, in the way that geography and physics are spatial sciences. Instead, they mark the transition from second to third space, or define the dialectics in between representations of space and spaces of representation. With Goodman, a philosophy of space may exemplify a contemporary conceptualization of space, which the same time denotates (and thus produces) physical space. Philosophical concepts of space, then, are not about a "true" or "false" *representation of nature*, but rather, they are the *expression of culture*.

This approach has also been claimed by iconology, namely by Erwin Panofsky (1892-1968), in the early twentieth century. This school of thought simply called the difference between denotation and exemplification that of *iconography* (what is shown in a picture) and *iconology* (how it is shown in a picture).[13] If philosophies are understood in this way, as a structural resemblance of scientific conceptualizations, they provide much deeper insight into cultural processes than they do on the level of their own argumentation.

Games as Spatial Concepts

Building on this, we can now look at computer games as more than just a critique of our epoch and its understanding of space, which can indeed be done. Certain readings of *Tetris* (1984), for example in Janet Murray's work, conceive of it as a (critical) resemblance of contemporary capitalism.[14] But we could also attempt to understand computer games as exemplifications of spatial concepts: symmetrical representations of asymmetrical denotations or, in short, as thirdspaces of representational spaces. Computer games, then, are not conceived of as designating a certain space or place, but as demonstrating what a certain (historically contingent) truth of space can look like. So it is not the *what?* of space or the *where?* of place, but the *how?* of space—or its likeness.

The task of interpreting games as representational spaces, therefore, must be to use spatial theory to analyze games, to the extent that they express or enact spatial concepts—or possibly contradict them. Jon Cogburn and Mark Silcox, in their book on *Philosophy through Video Games* (2009), included a chapter discussing the success of Nintendo's *Wii* console from

13 | Erwin Panofsky, "Iconography and Iconology: An Introduction to the Study of Renaissance Art," *Meaning in the Visual Arts: Papers in and on Art History* [1939] (Garden City NY: Doubleday, 1955), pp 26–54.

14 | Janet H. Murray, *Hamlet on the Holodeck: The Future of Narrative in Cyberspace* (New York NY: Free Press, 1997), p. 144.

2006 in contrast to Microsoft's *Xbox 360* and Sony's *PlayStation 3* systems. They apply a similar idea to the one presented here, when they argue that:

> [...] very few people predicted the success of the Wii because nearly everybody's view of the human-computer interface presupposed the truth of phenomenalism. According to this philosophical theory, people do not directly perceive the actual world, but instead experience a realm that is a function of their own private sensory manifolds. [...] By contrast, enactivist theories of perception hold that human beings do directly perceive the world. According to enactivism, this direct perception is a function of the way we physically manipulate ourselves and our environments. Unlike phenomenalism, enactivism provides a compelling explanation of why Wii gameplay is more realistic.[15]

Even though the final claim of "realism" should be viewed critically in the long term, Cogburn and Silcox propose the possibility that, on the level of hardware, different exemplifications of philosophical world-views can already be found: rationalistic dualism (in the style of Descartes) and embodiment (as presented in the concept of phenomenology in the early twentieth century).

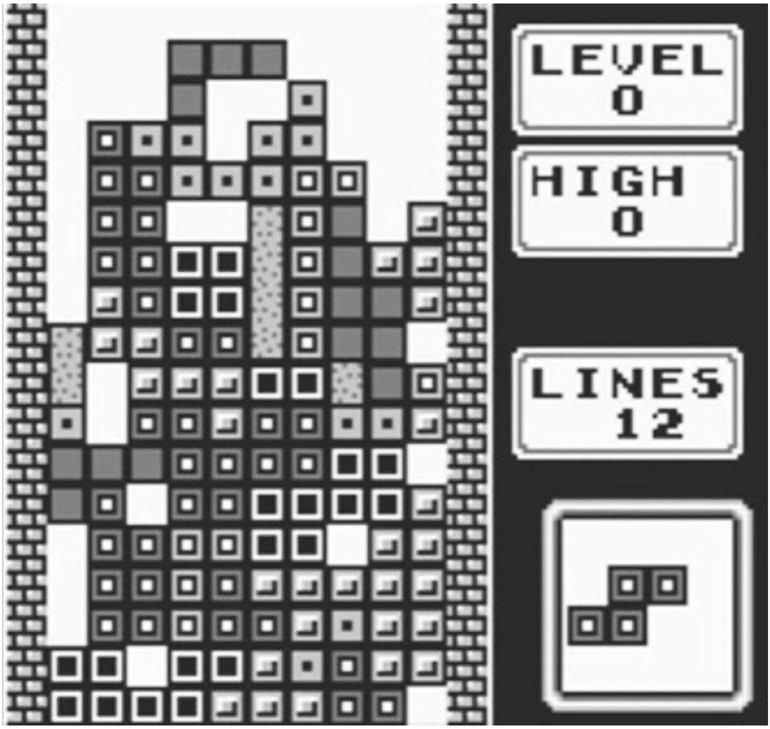
"Tetris" as Topic Space

From the classical period of ancient Greece through the Middle Ages, a negative concept of space (in the modern sense) prevailed. Such conceptualizations have since been characterized as related to the phenomenon of *horror vacui*: the experimental demonstrations of empty space as a "vacuum" carried out in the seventeenth century by Blaise Pascal (1623-1662) and Otto von Guericke (1602-1686). The dominant spatial concept of antiquity was based on the idea that the divinity of the cosmos does not allow for space to be empty ("without God"). Even though concepts such as the Platonic *chora* (which originally referred to one acre outside the city-walls) could be understood as "open space" or "absolute space," this was basically a modern projection of Isaac Newton's (ca. 1642-1726) physics onto an-

15 | Jon Cogburn and Mark Silcox, *Philosophy through Video Games* (New York NY/London: Routledge, 2009), pp. 20–21.

cient concepts.[16] The dominant interpretation of physics can be found in Aristotle's *Physics*, in which he assumes that every object has its own place (*topos*), i.e. the object occupies "a space," from which derives the belief that—as there is no empty space—even air and other natural phenomena are objects or elements.

Fig. 72: Aristotelian space in Tetris



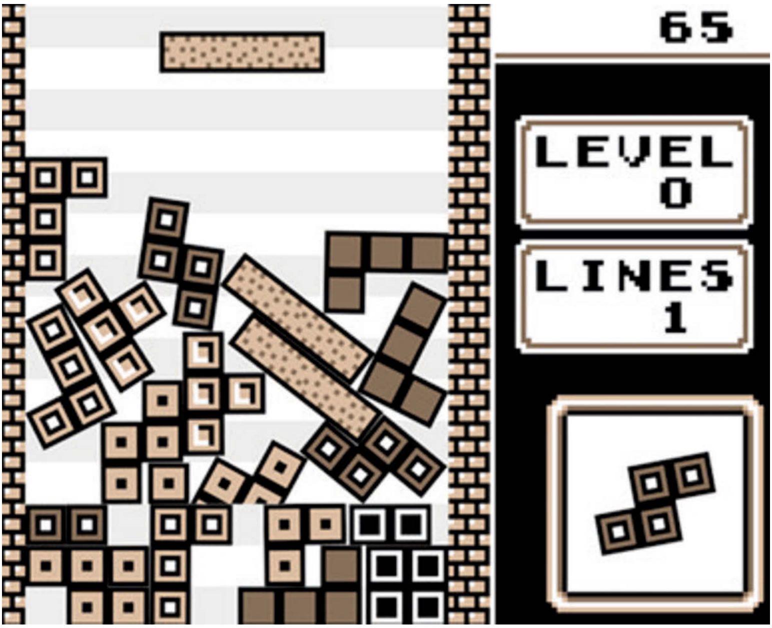
However, those *topoi* are not part of a greater space, as an encompassing *topos* that exists prior to objects—as Plato suggested—but rather, all places are "attached" to things. From this perspective, one could conceive of the game *Tetris* as an exemplification of *topic* space also related to the *horror*

16 | Jacques Derrida, "Chora," *Chora L Works. Jacques Derrida and Peter Eisenman* [1987], ed. Jeffrey Kipnis and Thomas Leeser (New York NY: Monacelli Press, 1997), pp. 15–32.

vacui: even though there is something like an "empty" space, in which things seem to move freely, that space is defined only by the shape of the objects themselves, which block out space occupied by "air." Each possible location is already defined and there is no way to "place" the tetraminos other than in these *topoi*.

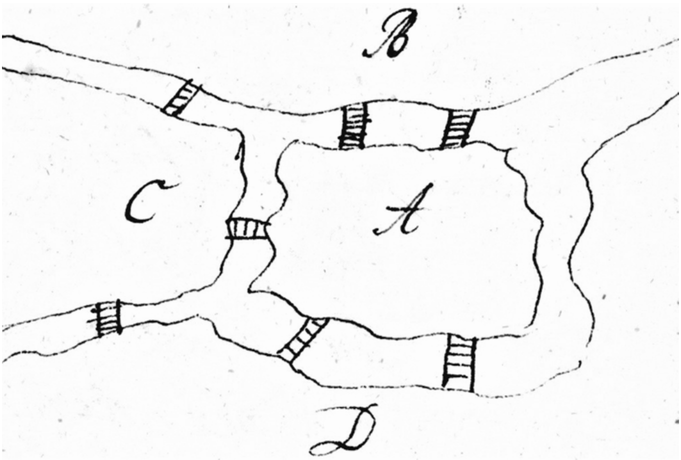
Even though it looks like they would fall due to the force of gravitation, once they are placed, the tetraminos do not move anymore, even if they would naturally fall over. As an exemplification of a spatial concept, the variation *Not Tetris* (2010) then demonstrates how *Tetris* would perform if it were representing Newtonian space: blocks have no predefined places, but fall over due to gravitation. Thus, the possible variations of gameplay in *Tetris* serve to enforce the modern understanding of space compared to the ancient one.

Fig. 73: Newtonian space in Not Tetris, "Advent" as Relational Space



Compared to the *topic* space of antique physics, *relational* space is a topological concept that stems from graph theory. This dates from the early eighteenth century, namely from the Swiss-Russian mathematician Leonhard Euler (1707-1783), who used games like chess to pose mathematical problems. For example, with chess: how could one calculate the possible moves with the knight and touch every square on the board, but all of them only once? Another game Euler discussed is *Seven Bridges of Königsberg*, in which the quest involved crossing all seven bridges of the capital city of Eastern Prussia over the river Pregel and returning to the starting point without using one of them twice, but using *all* of them once.[17] As Euler demonstrated, this is impossible due to the position of the bridges. He provided a proof of this impossibility by reducing the topography of the city's inner island, canals, and shores to a pure space or relations of points, i.e. a topological net, system, or labyrinth. For such a labyrinth to be "unicursal," two connections (or edges) are always necessary between every knot (or vertex) of the graph, in order to constitute a walk, in which a return to the starting point is possible.

Fig. 74: Euler's topological drawing of the seven bridges of Königsberg across the river Pregel

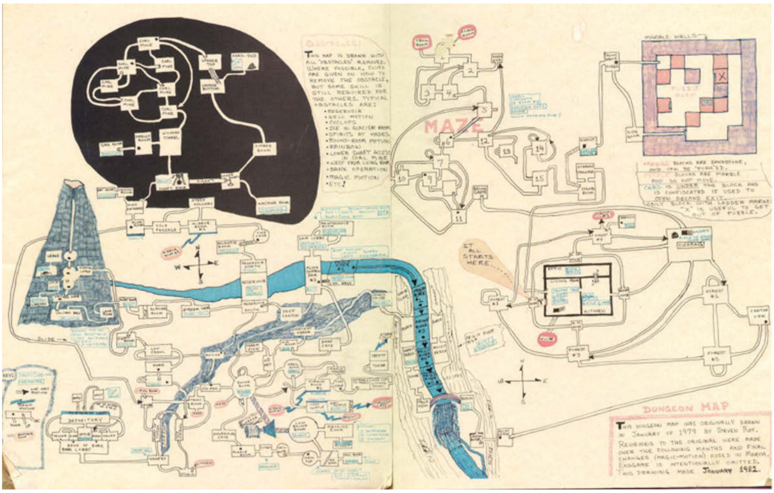


Even though there is a digital game entitled *The Seven Bridges of Königsberg* (2015), which reenacts as well as provides variations of the mathe-

17 | Leonhard Euler, "From the Problem of the Seven Bridges of Königsberg," *Classics of Mathematics* [1736], ed. Ronald Calinger (Englewood Cliffs NJ: Prentice Hall, 1995), pp. 503–506.

matical problem, there were also earlier works that exemplified its specific spatial task. *Adventure* (1976) and its successor *Zork* (1980), as well as other "text only" adventure games, exemplify a relational space in which the task is not only to find the way to the final knot, but also to find the most efficient walk between the starting point and the end point (as this is what the game counts in order for users to play). In fact, Newtonian space is present in *Zork* as an illusion of a world, too, but primarily as predetermined descriptions rather than related to players' actions, who were mostly limited to giving topological orders such as typing "n" for the action "going north."

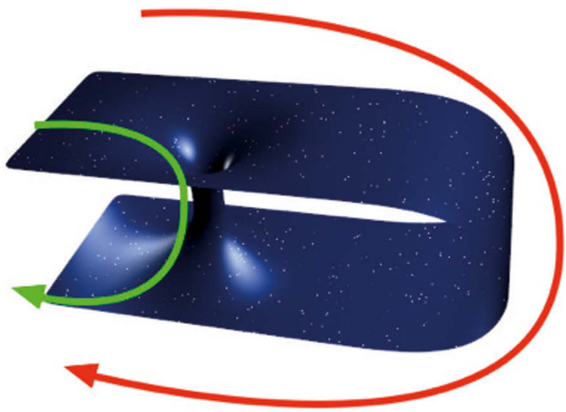
Fig. 75: A fan's drawing of Zork's topological space



"Portal" as Curved Space

Closely linked to the concept of relational space in mathematics is the physical idea of curvature, which was initiated by nineteenth-century non-Euclidian geometry and further considered by theories of relativity in the twentieth century. As the assumption of parallels in Euclidean space could not be proven, a need for an alternative geometry gave rise to new concepts of space. Whereas, for Euclid, a plane was defined as the (non-spatial) surface of an object, Carl Friedrich Gauss (1777-1855) defined a plane as a spatial object that could be curved. Thus, it could be three dimensional in and of itself (with a "flat plane" being a special case).[18] Applied to three-dimensional object-space, this means that it could be conceived of as curved in the fourth dimension.

Fig. 76: Curved (outer) space with portal or "wormhole"



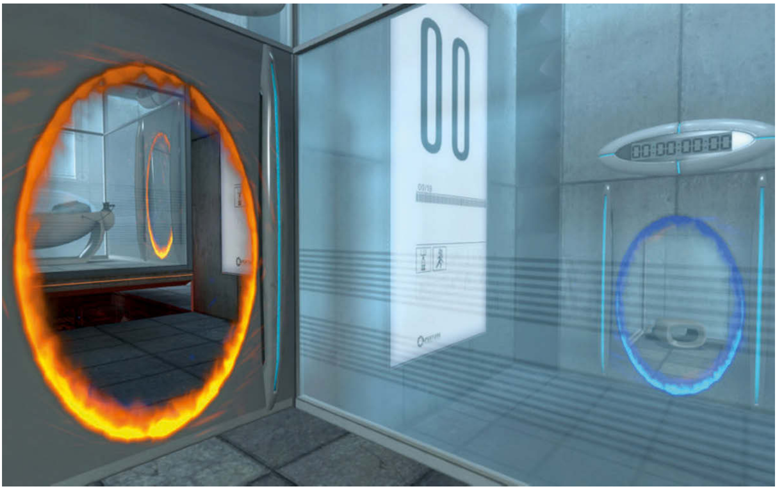
But, as opposed to the curvature of the plane in three dimensions, the curving of space itself cannot be perceived by humans; rather, it becomes an object of speculation.[19] Since Edwin A. Abbotts novel *Flatland* (1882), artists as well as scientists have been looking for an example of four-dimensional space—not to be confused with the problem of time being an additional dimension of space, hence "space-time." One way to demonstrate this is to show the consequences of the folding or bending of space, and not the curvature as such. This is precisely the situation in *Portal*

18 | Karl Friedrich Gauss, *General Investigations of Curved Surfaces* [1827] (Mineola NY: Dover Publications, 2005).

19 | Linda Dalrymple Henderson, *The Fourth Dimension and Non-Euclidian Geometry in Modern Art* [1983] (Cambridge MA/London: The MIT Press, 2013).

(2007), in which three-dimensional space is (hypothetically) folded back onto itself, without giving the visual impression of a curvature.

Fig. 77: Portals in Portal



Again, this is not a claim that the four-dimensional concept of space is "true," it only states that computer games can exemplify philosophical concepts—perhaps more accurately than any other medium.