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Article

Mental simulation and intentionality in ‘Roguelike’ video games

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Abstract: This paper bridges phenomenological theory with practical game design by examining how players of ASCII Roguelikes develop unconscious mastery through mental simulation—a process with implications for interface design, player onboarding, and cognitive load management in games. While the framework is philosophical, its applications extend to empirical player experience research, particularly in understanding how minimalistic or abstract interfaces can leverage embodied learning. Employing a postphenomenological framework, I take ‘Roguelike’ video games, which use ASCII graphics, as a case study for examining ‘mental simulation’, which is described in neuroscience as an automatic, unconscious process by which the mind readies us for performing tasks that we have learned from previous experience. The experience of playing ASCII Roguelikes is analyzed phenomenologically using the concepts of ‘intentionality’ and Heidegger’s ‘ready-to-hand’, and through this analysis the connection of these concepts to mental simulation is explored. I argue that the development of the capacity for mental simulation runs concurrently with the different stages of intentional disclosure and the development of what Heidegger calls ‘readiness-to-hand’, in which our intentional relationship and level of conscious engagement with an object changes as we become more familiar with it.

Keywords: philosophy; phenomenology; postphenomenology; mental simulation; intentionality; Heidegger; philosophy of technology; ASCII; video games; Roguelike

1. Introduction

This paper bridges phenomenological theory with practical game design by examining how players of ASCII Roguelikes develop unconscious mastery through mental simulation—a process with implications for interface design, player onboarding, and cognitive load management in games. While the framework is philosophical, its applications extend to empirical player experience research, particularly in understanding how minimalistic or abstract interfaces can leverage embodied learning, exploiting our evolved cognitive and phenomenological capabilities to create immersive experiences.

Mental simulation is described in neuroscience and cognitive science as an automatic, unconscious process via which the mind, in conjunction with the body, readies us for and helps us in performing previously learned tasks by imaginatively simulating them in our mind’s eye. Even our most familiar tasks consist of an intricate set of elements, requiring many small, coordinated bodily movements performed skillfully with different body parts working together in harmony. Simply making the morning coffee is already complex, involving various types of movement, muscle memory, judgment, hand-eye coordination, a degree of skill, and so on. The reason we do not have to constantly think about all these intricacies is because, having learned them, we perform them unconsciously thanks to mental simulation, in which, “within the span of a couple seconds, we are able to draw rich inferences and make predictions

about novel scenes [1].” In preparation for performing tasks we have already learned, our minds automatically simulate them for us, so we do not have to think about them anew every time. Mental simulation is the way our mind readies us for performing familiar tasks.

In this paper, I take ‘Roguelike’ video games which use ASCII graphics, as a case study for examining mental simulation in conjunction with phenomenological concepts. I begin by situating my work in a postphenomenological framework conceived of as a response to the Heideggerian philosophy of technology. I then describe the occurrence of mental simulation in playing ASCII Roguelikes and the stages we go through in acquiring the capacity for mental simulation, bringing phenomenological concepts to bear on the idea of mental simulation, especially ‘intentionality’ and Heidegger’s ‘readiness-to-hand’. I show the relevance of these ideas for discussions of mental simulation and mount a modest critique of Heideggerian phenomenology in the process, which takes aim at its deliberately imposed limitations in avoiding the concepts of cognition, mind, and embodiment.

2. Theoretical framework: Postphenomenology, intentionality, and the ready-to-hand

I situate this study within the theoretical framework of postphenomenology, an increasingly popular research perspective inspired by Don Ihde, conceived of as “the practical study of the relations between humans and technologies, from which human subjectivities emerge, as well as meaningful worlds [2].”

Postphenomenology is the study of how technologies mediate human experience, how technology facilitates our connection to and understanding of ourselves and our shared world. The mediation of human experience through technology can take many forms. Communication is mediated through smartphones and Zoom. Navigation is mediated through Google Maps. Medical care is now often facilitated by diagnostic machines. Our immersive gaming experiences are mediated by the technology on which they are produced and are played. In a Roguelike, the major focus of this paper, your experience of navigating a dungeon is mediated through a network of symbols and the hardware on which they are represented to you. Many aspects of human beings are now directly enabled by or done through technological objects, and modern technology has opened up new forms of human experience previously unimaginable. Postphenomenology employs the conceptual vocabularies of phenomenology to study the various ways in which our being in the world is mediated by technology.

Postphenomenology exhibits a complex relationship with phenomenology. It names itself after phenomenology to indicate its being influenced by it and its sympathy for some of its key features, like its conceptual vocabularies, methodologies, and commitment to analyzing the human being’s existence in and relationship to its world. But it names itself *post-* to indicate the strength of its departure from classical phenomenology, especially the dystopian visions of it sometimes offered by its key figures, like Heidegger. In a postphenomenological spirit, I intend to bring phenomenological concepts to bear on a particular form of video game technology and the idea of mental simulation in the hope that they can mutually illuminate each other, while using this analysis as an opportunity to critique (Heideggerian) phenomenology.

Heidegger is key to understanding postphenomenology, with The Question Concerning Technology being perhaps the key text. As Verbeek explains, "Heidegger was one of the first to think about technology from this phenomenological perspective, and his views are an important part of the background against which Ihde's philosophy of technology is to be understood [3]." In his masterpiece Being and Time, one of Heidegger's lines of analysis concerned the 'world', meaning the everyday individual world of human concern[1] [4]. This immensely complicated system of meanings, relations, and projects constitutes a context of significance in which we operate. But, as Heidegger realized, although everyone discloses and inhabits a world, different historical epochs have disclosed their worlds differently. No doubt many people have understood themselves as being created by a transcendent God and part of a grand celestial plan that encompasses all things. The world of such people would still be structured according to the relations of significance between the things in it, but it would be arranged very differently to, say, the world of a staunch atheist scientist with a materialist philosophy. What counts as significant, to what degree, and the relationships of significance that hold between things would vary greatly between these two types of people—they would disclose their worlds differently. According to Heidegger, historical epochs are defined by the modes of disclosure that dominate them. Our current epoch's is what Heidegger calls technology.

Heidegger argues, counterintuitively, that "the essence of technology is by no means anything technological" [5]: it cannot be reduced to any type(s) of technological artifact, their instrumental uses, or the activities we engage in with them. These are all made possible by the more existentially fundamental technological mode of disclosure that characterizes our epoch—where Heidegger locates the true 'essence' of technology. For Heidegger, modern technology discloses the world in a way that understands it as something to be dominated and exploited for our benefit.

> The energy concealed in nature is unlocked, what is unlocked is transformed, what is transformed is stored up, what is stored up is, in turn, distributed, and what is distributed is switched about ever anew. […] Everywhere, everything is ordered to stand by, to be immediately at hand, indeed to stand there just so that it may be on call for a further ordering. Whatever is ordered about in this way has its own standing. We call it the standing reserve [Bestand]. [5]

Heidegger views the technological way of disclosing entities as "alienating in a hermeneutic sense [because] it affects our understanding of the world and of ourselves." [6]. In it, we encounter objects as mere 'standing-reserve', as standing by ready for us to take, transform, distribute, store, buy, sell, etc. We lose touch with a more primal, reverent experience of objects and ourselves as being part of the grandeur of being, understanding objects only in terms of what we can take from them and selfishly taking more than we need from nature. Heidegger speaks of this as a "danger in the highest sense" [5], one we must combat by using art, one of our most reliable methods of finding new ways to disclose things.

Postphenomenology departs from Heidegger's analysis of technology in several ways, but I will focus on three of the most important. Firstly, it distances itself from "Heidegger's dystopian view of modern technology" [7] without necessarily rejecting his insight that our historical predicament has been radically transformed by technology [8]. Technology is not viewed as an existential threat or as wholly negative.

Postphenomenology embraces the concrete analysis of human-technology relations from diverse perspectives, wanting to know both the negatives and the positives and the effects of these relations on us. As such, postphenomenology "analyses the relations between humans, technologies, and the world […] in various spheres of life" [9], from education to artificial intelligence [10], medicine [11], and even fitness [12].

The second point of departure is postphenomenology's turn from 'technology' to 'technologies'. As Verbeek puts it, "insofar as [Heidegger] thinks about concrete technological artifacts, it is as a product of this technological interpretation of reality." [3]. Heidegger's analysis of technology abstracts from technological artifacts, more concerned with the historical and phenomenological phenomena that make them possible. Any discussion of actual technologies in Heidegger only serves to back up his more abstract reflections on the technological mode of disclosure. But as Ritter explains, "in accordance with Husserl's watchword of phenomenology, the postphenomenological philosophy of technology wants to stay close to the things themselves [13]." Postphenomenology turns a phenomenological eye to concrete examples of technologies from every area of life in line with Husserl's motto of returning 'to the things themselves' that Heidegger fails to do justice to because his analysis is concerned with the 'essence' of technology underlying them. This tendency has recently been concretized by Mykhailov and Liberati in their articulation of a postphenomenological version of Husserl's motto: "back to the technologies themselves [14]."

Thirdly, "rather than thinking in terms of alienation, [postphenomenology] thinks in terms of mediation [2]." Technology is not thought of as distancing or alienating us from the world or from a 'purer' state of being but is accepted as an increasingly integral part of our lives, one that mediates our connection to the world in increasingly complicated ways worthy of philosophical attention. Postphenomenology thinks of technology as Merleau-Ponty thought of the blind man's cane, which is no longer an object of disclosure but has become part of his apparatus of disclosure, integral to the disclosive process by which he meaningfully apprehends his environment. Postphenomenology acknowledges that technology performs similar roles for us and therefore is guided by a conception of human experience as a "technologically mediated lived experience [15]." Things like glasses, phones, cameras, etc., are not just objects of perception for us; they mediate our perception of and connection to the world.

Despite the clear intention to move beyond Heidegger, postphenomenology often makes use of concepts from his work, especially transparency and breakdown. As Aargaard et al. explain, Heidegger's concept of the 'ready-to-hand' was the influence behind Ihde's postphenomenological concept of transparency, the phenomenon in which tools and technologies "withdraw from conscious experience and allow us to focus on the task" [16] at hand. (More on that later.) Heidegger's remarks on 'unreadiness-to-hand' were the influence behind the postphenomenological concept of breakdown. Heidegger argued that the equipmental aspects of the objects we use and their place in our worlds show themselves most forcefully when they break down, when they cease to fulfill their purpose and the task(s) we use them for are interrupted. "Breakdowns therefore offer fruitful opportunities to consider the ordinary roles of artifacts in everyday practices [16]."

In what follows, I will also make use of the phenomenological concept of 'intentionality' and Heidegger's concept of the 'ready-to-hand' to analyze how mental simulation takes place in a particular form of technological artifact: 'Roguelike' video games, which use ASCII graphics. I do this in the hope that such an analysis could be mutually illuminative for (post)phenomenology and scientific discussions of mental simulation and use my analysis as an opportunity to criticize Heideggerian phenomenology. We will get into more details about 'intentionality' and the 'ready-to-hand' later, but for those unfamiliar with these terms, they are phenomenological concepts, both of which somehow concern the way we meaningfully apprehend objects in our experience.

Intentionality refers to the fact that the objects we direct our consciousness towards are always meaningful. One way intentionality is often phrased in philosophy is to say that our experiences are always about something. We do not perceive objects as meaningless bundles of shapes and colors that we then shape into meaningful things. In our experience, things are always already meaningful; they always appear to us in our experience as already meaningful. Another way of saying this would be to say that our experiences of objects always possess intentionality. In what follows, we will be discussing how games composed entirely of ASCII symbols, as opposed to visual graphics, can nonetheless be grasped as meaningful and significant representations of worlds. The phenomenological concept underlying this possibility is intentionality, the capacity of our experiences to have a meaningful relationship with their objects beyond the perception of sensory qualities like color, shape, etc.

Heidegger's concept of the 'ready-to-hand' can be thought of as an evolution that our intentional experience of objects undergoes the more familiar we get with them. Our experiences of objects are always meaningful—they always have intentionality—but our relationship to this meaning can change the more familiar we become with using particular objects. When we first encounter an object, we must become acclimatized to understanding what it is and being able to use it. The more familiar we become with using an object, the more it withdraws from our conscious experience when we use it, the less we have to think about it, and the more unconscious our relationship to it becomes, to the point where we can use it without thinking. In Heidegger's terminology, through this process objects go from being 'present-at-hand' (being 'just there') to being 'ready-to-hand': meaningfully incorporated into our being such that we are ready to use them without even thinking about using them.

I will describe the experience of learning, becoming acclimatized to, and playing ASCII Roguelikes with reference to the phenomenological concepts of 'intentionality' and the 'ready-to-hand', eventually linking them to 'mental simulation'. The process of intentionally disclosing an object and that object becoming ready-to-hand is the exact process that players must go through in acclimatizing to any graphical interface. But ASCII Roguelikes offer a unique and properly phenomenological case study distinct from graphical games. Mainstream games use visual realism to reduce cognitive load (like a sword icon intuitively representing a weapon), but ASCII Roguelikes demand that players construct meaning from abstract symbols, thereby representing the process of apprehending objects in their intentionality in a deeper, more enactive way than graphical games. This process also mirrors real-world skill acquisition (such as learning musical or chess notation) but is heightened by

procedural generation and permadeath, which force continuous re-engagement with the ASCII code. Unlike static interfaces, Roguelikes dynamically reconfigure symbols, requiring players to adapt their mental simulations—a feature exploitable in adaptive training tools or accessibility design.

For game designers, this analysis suggests that the opacity of ASCII interfaces is not merely a stylistic choice but an engagement of the player's capacity for mental simulation. By requiring players to 'fill in' graphical gaps, Roguelikes exploit the same cognitive processes that underlie expertise in other domains, such as musicians interpreting sheet music or academics interpreting complex texts. This could inform designs for educational games aiming to train symbolic reasoning or provide inspiration for game designers who wish to subvert modern graphical design norms to provide different types of interesting and challenging experiences. But first I must explain what Roguelikes and ASCII graphics are.

3. 'Roguelike' video games and ASCII graphics

'Roguelike' video games occupy an important, curious place in gaming history. They are one of the oldest types of video game, have been quite influential, are enduringly popular (in that people have been playing them since the early 80s), and yet have always been one of the most impenetrable genres and remain quite a niche product[2]. As Roguelike developer Darren Grey puts it, Roguelikes "emphasize gameplay before aesthetics" [17] and because of this, they often eschew graphics, sound, and narrative in favor of immensely complex, cerebral experiences more akin to a puzzle or chess than many adventure games made today. The emphasis on gameplay over aesthetics can be observed powerfully in their use of ASCII graphics.

Roguelikes come from the very earliest days of computer games, well before graphics as we know them today existed. As Maria Garda notes, one of the innovations of Rogue (the game the genre is named after, released in 1980) was "Ken Arnold's contribution and his creation of the library of software routines called 'curses' that allowed for ASCII graphics [18]." ASCII is shorthand for 'American Standard Code for Information Interchange', and ASCII graphics represent everything in the game world using letters and punctuation marks from this code. The player character is usually an '@' sign (as in 'where you're at'), walls are often made of hyphens, doors might be '+' signs, stairs are often '<' and '>' signs, etc. This meant that Roguelikes could be played on very basic computers, and most Roguelikes even today are very easy to run, are often available online for free, and are often maintained by volunteers. As Mark Johnson points out, even though computer graphics have massively advanced since the 80s, the use of ASCII graphics "has continued largely unabated within the Roguelike community [19]."

But what kind of game is a Roguelike? This is, perhaps surprisingly, one of gaming's more controversial questions, the subject of prolonged, detailed, often fractious debate among fans and developers for almost four decades as the genre has evolved. Early Roguelikes are admittedly very complicated affairs, and specifying what unites them all is difficult. (And as Zapata shows, even the debate's key terms and ideas have changed a lot from the earliest days of this discussion [20].) This is complicated even further by the recent wave of games now commonly referred to as

'roguelites', which are heavily influenced by but depart significantly from traditional Roguelikes and mitigate some of their more stringent aspects—modern classics like Spelunky, Hades, Binding of Isaac, and Slay the Spire. These games have only intensified the discussion around Roguelikes as diehard fans fear for the purity of the genre. This is attested to well in a 2021 article in PC Gamer by Luke Winkie, which is worth reading in full for anyone interested further. Winkie writes:

At this point, a crucial part of being into Roguelikes is to carry on a constant dialogue about what a Roguelike is. […] The passion for the purity of the genre transcended the grievances I became accustomed to in my communities of choice. There was something spiritual here […] What do they think they're losing as Roguelikes stray further from their stringent origins? Why is genre sanctity worth defending to the death [21]?

All this serves to indicate the complexity of what I am discussing here. I will not be able to give a full history of Roguelikes or the complexities of the debate surrounding the meaning of the term, but for anyone interested, I recommend David Craddock's book Dungeon Hacks [22] and John Harris' Exploring Roguelike Games [23]. Here, I will be focusing solely on traditional Roguelikes that use ASCII.

The Roguelike's fascinating history stretches back to the very earliest days of video games, when people were still trying to develop the technology that we are so familiar with in them today. Rogue captured the imaginations of computer-savvy university students in the 1980s and inspired many imitators—hence, 'Roguelikes': games that are like Rogue. Usually, the objective in Roguelikes is to descend to the lowest level of a network of dungeons, retrieve a certain item and escape, or kill a boss. Behind their deceptively simple surfaces lies a complex set of mechanics that results in deep, difficult, and often punishing experiences. Some of the most important ones are as follows:

1) Procedural generation: Perhaps the most influential Roguelike game mechanic. Roguelikes were some of the first games to randomly generate a significant portion of the game environment: map layout, items, and enemies are all subject to random generation, meaning the game is different every time you play it (Which is also very economical for game developers—if you program a game to generate its levels randomly, there is no need to design them from scratch.).
2) Permadeath: Simply put, if you die, you die. There is no option to save and restart, no checkpoints, and all progress and character development is lost upon death (Modern 'Roguelikes' tend to make this feature less punishing by featuring 'meta-progression', allowing for upgrades that persist between your various attempts, or 'runs'. This could be in the form of persistent upgrades to the player character's stats, unlocked weapons, abilities, etc. Traditional Roguelikes are much more stringent and overwhelmingly tend not to do this.).
3) Turn-based: Each action takes one in-game 'turn', and whenever the player takes a turn, so does everything else in the game world. You have as much time as you want in-between turns to think.
4) Complexity: The game should be complex enough to allow for many possible approaches to playing it, multiple solutions to problems, different tactics, etc.
5) Resource management: You must manage your resources well to survive.

6) Hack ‘n’ slash: Basically meaning diplomacy is not an option—much of the gameplay is structured around and consists of combat.
7) Exploration, Discovery, and Unknown Items: Along with combat, the gameplay largely consists of exploring and discovering the environment and its contents. Often, the function of items like potions or scrolls is unknown to the player when they pick them up until they use them or find another way to find out what they do, like throwing them at an enemy or using an ‘identify’ spell [24].

Roguelikes offer complex, unforgiving, unpredictable experiences with interweaving systems and mechanics that require learning and force the player to adapt to an environment that differs from playthrough to playthrough. But with many traditional Roguelikes, even learning how to play the game is made difficult by their ASCII graphics, which the player first must decipher and become familiar with. This process of familiarization can be described according to what in phenomenological terms could be called the different stages of intentional disclosure one goes through when interacting with objects and in terms of what Ihde and Heidegger called ‘transparency’ and ‘readiness-to-hand’, respectively.

4. Playing a Roguelike: Intentional disclosure and readiness-to-hand

In phenomenology, ‘intentionality’ refers to the fact that consciousness is always consciousness ‘of’ something, to the relationship of ‘aboutness’ that obtains between the object of your experience and your experience of the object. My experience of the laptop in front of me is not one of an indifferent bundle of colors and shapes but is about the laptop. In our experience, objects are ‘always already’ disclosed as meaningful. As Heidegger put it,

What we ‘first’ hear is never noises or complexes of sounds, but the creaking wagon, the motorcycle. We hear the column on the march, the north wind, the woodpecker tapping, and the fire crackling. It requires a very artificial and complicated frame of mind to ‘hear’ a ‘pure noise’ [25].

Heidegger notoriously refused to use familiar concepts like ‘mind’, ‘body’, ‘consciousness’, ‘human’, ‘intentionality’, ‘cognition’ (etc.) because he thought his new phenomenological-ontological language would overcome them, stripping away our preconceptions and allowing us to grasp the phenomena more fundamentally. But an important critical question we can ask of his work is whether his avoidance of the terms he criticized as inadequate was useful. Perhaps his work would have spoken more to what it means to be the kind of entity we are if he had used such terms or admitted that his own work was consequential for and relevant to them. ‘Intentionality’ could be a case in point—for someone who refuses to engage with the term in his phenomenological masterwork, Heidegger captures the idea behind it well. True, he opts to speak of our disclosure of objects in terms of relationships of ‘significance’ [25] rather than intentionality, directedness, or aboutness, but this is what the concept of intentionality is driving at. As Sheehan puts it, “[things] are meaningfully present to us. They do not just exist; they make sense” [26]. Intentionality makes sense of its object.

But intentionality varies: we do not make sense of things the same way all the time. Another way of putting this would be to say that we intentionally disclose things in different ways, meaning we can apprehend them meaningfully in different ways, and there can be different relationships of 'aboutness' between our experiences and their object(s). If we take playing ASCII Roguelikes as an example, we can observe that the player must go through a process of familiarization with ASCII, which begins in difficulty and progresses to a point where they can decipher and interpret the code without thinking. This process involves an evolution of the player's intentional disclosure of the ASCII code in which their engagement with the code becomes progressively 'transparent' in Ihde's terminology, or 'ready-to-hand' in Heidegger's.

In the early phase of this process, the player is unfamiliar with and unhabituated to the ASCII code, but they still disclose it intentionally as something meaningful. They know that it's part of a game and may easily guess what some of the basic symbols signify, like the walls and corridors. But they are unable to navigate the game environment skillfully and when they first encounter many symbols, often they will not know what they mean. Their intentional disclosure of the code will be limited, and the engagement with the game will feel clumsy, abstruse, and slow. This stage involves lots of reading of the game's descriptions of the events taking place and perhaps consulting search engines. The player will look at symbols, take time to decipher and check what they mean, and then act based on that information. They will learn that the '@' sign indicates their character and learn how to move it, but initially understanding the game's turn-based nature and combat can prove difficult. Unless they did prior research, they will also not know the underlying systems and mechanics that being skilled at the game requires them to learn. (Like Dungeon Crawl Stone Soup's invaluable menu, which lets you decide how your experience points are distributed between your various skill stats.) They will not know the keyboard shortcuts that will make their life easier, and their early attempts at the game will be bad, with death coming quickly and often. The early stage of this process is characterized by the fact that the player's engagement with and intentional relationship to the ASCII code is mostly, even completely, conscious: they must think about what they are doing all the time because they have not yet habituated or become sufficiently skillful at navigating the code.

As the player continues, they will become more acquainted with and adept at navigating the ASCII graphics. Movement will become easier, and they will not find themselves checking what basic symbols mean as much—like early enemies or types of items. Their intentional disclosure of these objects and the way they make judgments based on their occurrence will become swifter, more acute, and more skillful. They may learn basic keyboard shortcuts like 'auto-explore', making their journey through the game world smoother and quicker. The process of looking at symbols, checking what they mean, and then acting will become more streamlined, with the 'checking' phase becoming less and less present. The player's engagement with the ASCII code becomes less and less conscious. They will have to engage consciously with it to decipher it at times, like when they encounter something new, but their need to do this will progressively reduce. Certain aspects of the ASCII interface will become what Ihde called 'transparent' and Heidegger 'ready-to-hand': having become learned and habituated, they will withdraw from the player's conscious

experience to allow them to focus on the task at hand. Those associated with movement, regularly occurring items, and early combat will be among the first parts of the game to become transparent.

As Heidegger wrote in his famous example of the hammer, "the less we just stare at the hammer-Thing, and the more we seize hold of it and use it, the more primordial does our relationship to it become" [25], meaning we get better at using it, and we encounter it in an increasingly unreflective way, paying increasingly less attention to the specific actions involved in hammering: gripping it, lifting it up, bringing it down, etc. Eventually, our need to consciously engage with these things fades away completely, and we can hammer away unthinkingly, with our mind free for other things. At this point, our engagement with the object has become 'ready-to-hand'. The same thing happens with ASCII graphics in Roguelikes. When we have become sufficiently familiar with and skillful at navigating them, our need to consciously engage with them in the manner we do when we first encounter them fades away completely, and our minds are free to concentrate totally on the task at hand, rather than the tools we are using to accomplish it.

Eventually, the player's engagement with ASCII graphics becomes ready-to-hand, the process of deciphering and interpreting them becomes unconscious, and the player's mind becomes free for engaging with them solely in terms of what the code represents. The relationship of intentionality with the object changes so that the object is disclosed solely in terms of what the code represents, and the fact that it is represented in terms of ASCII, which must be deciphered, withdraws from their conscious experience. The player's intentional relationship to the code progresses from its clumsy, unfamiliar, fully conscious beginnings, becoming less and less reflective, less conscious, to the point where they engage with the ASCII code in a habituated, skilled, unthinking manner. They stop deciphering the code and simply use it as a piece of equipment for a purpose—like Heidegger's hammer.

Before we turn to mental simulation, it is important to point out that this theoretical framework and its arguments arguably align with observable player behavior and could be verified empirically. For example, in NetHack, novices often consult 'legends' to decode symbols (like 'k' = kobold), while experts navigate dungeons without the need for doing this. The same is plausibly true of many other ASCII Roguelikes: when you have an ASCII graphical system that is sufficiently complex, it will be difficult for some new players to adjust to, which could then lead them to seek out help and advice from online sources. Beyond ASCII graphics, mechanical complexity is a feature of many Roguelike games, which could lead players to seek online help for becoming more familiar with the game. Mechanics such as bleeding or poisoning or D&D-style attack rolls are often not clearly explained, for example. Players of Dwarf Fortress often have to consult its Wiki to figure out its ASCII symbols, check how certain mechanisms work, or find crafting recipes[3]. This sort of behavior speaks to the gradual process of acquiring familiarity and increasing capacity for intentionally disclosing game environments and could be investigated through player interviews in more empirically focused studies.

Elsewhere, empirical studies could investigate player behavior over time using time-to-mastery metrics, keystroke logs, or measuring code-deciphering time between players of differing skill levels. Keystroke logs detecting delayed inputs during early

gameplay in comparison with more rapid actions upon increased familiarity with the game could provide empirical validation to the phenomenological account of the stages of acquiring mastery of an object. There is also a potential angle to be pursued regarding the similarities between traditional Roguelikes and chess. Both involve grid-based 'combat' scenarios between 'pieces' that have particular capabilities and moves, so there could be comparative studies concerning the way Roguelike players perceive, understand, and think about their gameplay, in much the same way that Gobet studied the thinking of competent chess players [27].

5. Mental simulation and 'readiness-to-hand'

The process of an object becoming 'ready-to-hand' for us parallels and involves the process of acquiring the capacity for mental simulation, which neuroscience describes as an automatic process by which the mind readies us for performing previously learned tasks. I will not be able to give a detailed review of the scientific experimental literature on mental simulation here, although I will give an example of an experiment that claims to be suggestive of its existence. However, it is philosophically plausible that such a process plays a role in making objects ready-to-hand for us. Through habit, muscle memory, practice, and so on, we become intimately and unreflectively familiar with objects and tasks, and they become as if 'stored' in us—this is what it means for something to become 'ready-to-hand'. Mental simulation is the neuroscientific way of accounting for this process and its role and place in the complex fabric of human cognition.

Experiments have been conducted that have been taken to be suggestive of mental simulation, including Tucker and Ellis' 1998 study, On the Relations Between Seen Objects and Components of Potential Actions [28], which Elder and Krishna summarize as follows:

[the experiment] had participants view a series of common items (e.g., frying pan, tea kettle, dustpan) and indicate whether they were upright or inverted. Each picture was shown with the handle either on the right or the left, which was irrelevant to the response. [**Figure 1**] […] By pressing a key with either hand, participants indicated if an object was upright or inverted. [**Figure 2**] […] the researchers ultimately found that when the handle orientation matched the correct response (e.g., a left-facing upright frying pan paired with a left-key press), reaction time was faster than when the handed orientation did not match the correct response. […] This finding suggested that the mind is quicker when grip orientation and response match. The *readiness* of the participants' minds was the result of mentally simulating interaction with the object [29].

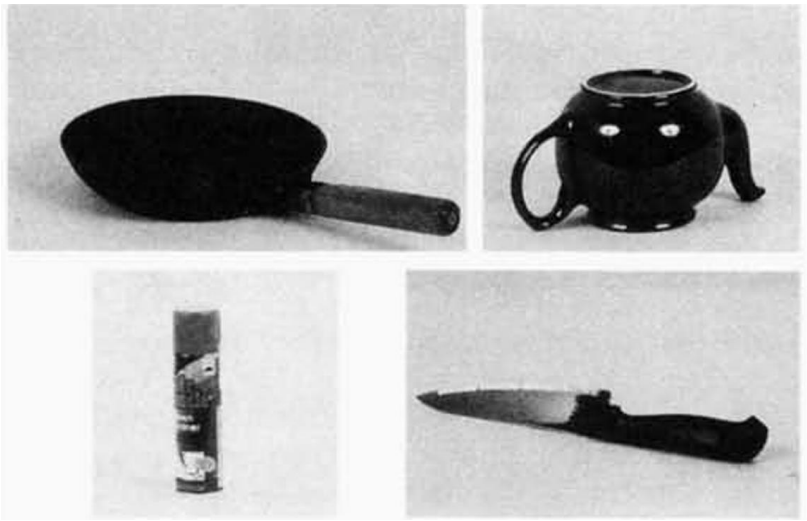

Figure 1. Images used in Tucker/Ellis' experiment [28].

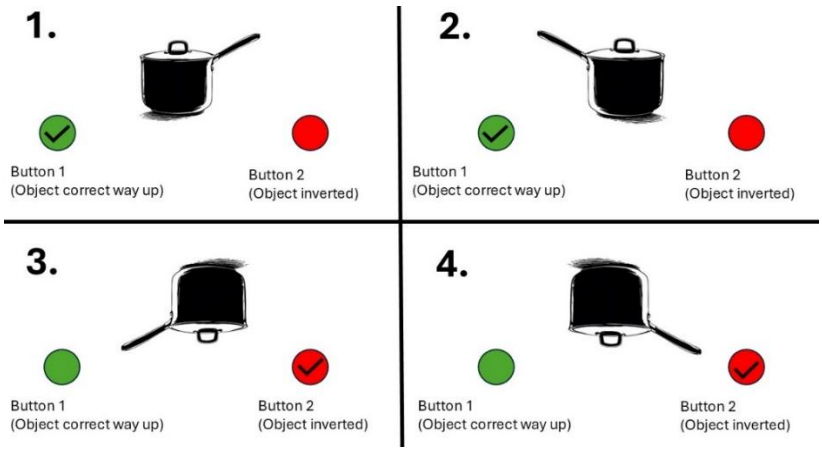

Figure 2. Visual illustration of Tucker/Ellis' experiment. Their results showed that response times were quicker in cases like 2 and 4 because the direction the handle of the object is pointing matches the side the correct button is on. Elder and Krishna argue that this is because in such cases mental simulation would be slightly easier and more quickly facilitated (pot image generated using openart.ai).

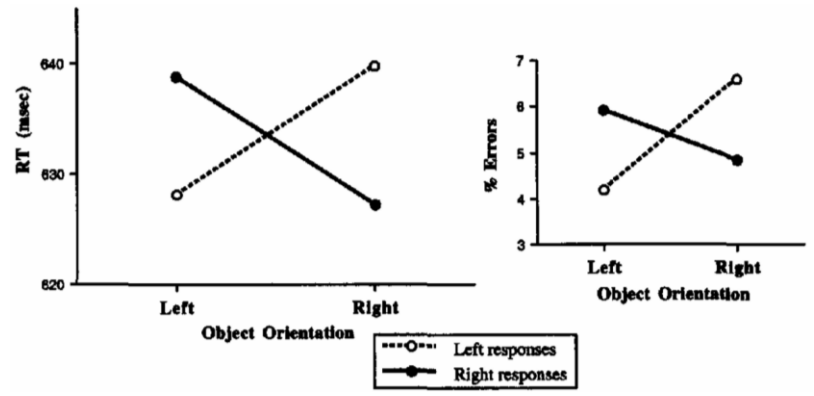

Figure 3. The most significant results from Tucker/Ellis' experiment show that right-hand responses were faster when the orientation of the object correlated with the hand used to indicate the correct response, and vice versa for left-hand responses [28].

This study showed that the mind was quicker to react when the visual cue of a familiar, everyday object more closely matched the mental images the participants had of interacting with the object, making the simulation of its use easier for them. [**Figure 3**] Participants had to look at the object to see if the image of it correlated with how they would correctly use the object in everyday life. When the object was correctly positioned and the orientation of the handles matched the hand they responded with, participants were quicker to respond because the mind was more easily simulating what it would be like to interact with that object in that position, which mental simulation posits it does when interacting with any object the person is familiar with. The mind was readier, more prepared for the response because the simulation of it in the participants' minds was more quickly facilitated. According to mental simulation theory, when people learn certain actions and behaviors, "your brain has stored these routinized processes and behaviors in memory, and automatically and unconsciously plays them back upon encountering the physical object—or even a representation of the object." [29] This experiment works on the hypothesis that this 'playback' process is easier if some of the imaginative work has already been done, so the mind will be quicker and more ready to react.

The idea that even the representation of an object can facilitate or stimulate mental simulation has been corroborated by the results of studies in other areas of cognitive research. For instance, a 2023 study showed that "implied motion influences the expected taste perception of advertised foods through mental simulation." [30] Another experimental study of mental simulation and language purported to show that "pictures of objects are verified faster when they match the implied orientation, shape, and color in a sentence-picture verification task, suggesting that people mentally simulate these features during language comprehension." [31] More recently, Li and Wan have shown that "an effective visual cue (i.e., human presence) that can be easily manipulated in destination photographs to facilitate such mental simulation processes" in the marketing of tourism products [32]. All of which testifies not only to the existence of mental simulation but also to the power of visual cues and representations to stimulate the mental simulation process.

If mental simulation is real, it is surely involved in the process of an object becoming ready-to-hand. But Heideggerian phenomenology could not have theorized such a process with the same level of clarity because of its self-imposed limitations in refusing to engage with the concepts of 'mind', the 'body', and 'consciousness' (or 'unconsciousness'). Certainly, Heidegger spoke of unreflective, pre-theoretical processes (like what he called 'understanding', 'interpretation', and 'mood' [25]) as he also spoke of mental phenomena (like thinking, believing, and perceiving), but his account of human existence suffers from problematic limits because of his refusal to engage with categories that are more intuitively familiar, since it could have shed more light on them and them on his ideas. Heidegger's account of readiness-to-hand is convincing: this is a real phenomenon. However, his analysis of it is situated within a framework of concepts that he himself has devised, and he displays little interest in comparing his concepts with more familiar ones or the intuitions behind our uses of them. It is a strong intuition, for instance, that our mental faculties have a role to play in something becoming ready-to-hand—but Heidegger precludes discussing this phenomenon in these terms.

More problematically, however, is Heidegger's lack of attention to embodiment, both in his analysis of readiness-to-hand and throughout Being and Time in general. This is a familiar critique of Heidegger, which many have discussed [33–36], but it is particularly prescient regarding the ready-to-hand and mental simulation because it is clear how vital the body is to these processes. A tool cannot become fully ready-to-hand without habit, which is embodied in muscle memory. Certain tools becoming fully ready-to-hand involve changes in the individual's body, like the strengthening of the arms of a worker or the calluses that form on the fingers of a guitarist. The body is vital to the process of becoming ready-to-hand, something that Heidegger ignores to a problematic extent.

Returning to the object of our case study, a Roguelike's ASCII graphics cannot become ready-to-hand without our eyes gradually becoming accustomed to them, which is an embodied process. Other aspects of playing them cannot become ready-to-hand without processes that also clearly implicate the body, such as being familiar with and adept at using a keyboard. There are aspects of playing a Roguelike that rely on things we might normally think of as 'mental', such as thinking about and deciding in relation to certain situations, but this thinking and reacting is always informed by bodily processes. The same is true of mental simulation: for our minds to have the capacity for simulating our engagement with objects so this engagement becomes easier, our bodies must have done a lot of work with these objects first, by gripping them, manipulating and moving them, and becoming skilled and practiced at using them.

This is also true in a less physically exertive sense with ASCII Roguelikes; our eyes must have become accustomed to dealing with them first before we can become fully habituated to interpreting and reacting to them. To be able to mentally simulate the '@' as our player character, the 'K' as a particular monster (etc.), we must first go through the exact (partially bodily, partially mental) process of familiarization that Heidegger describes in terms of the ready-to-hand. Without claiming that Heidegger's concept of 'readiness-to-hand' is exhausted in mental simulation (which I do not think it is), mental simulation is heavily involved in it and perhaps partially constitutes what Heidegger meant by readiness-to-hand. Perhaps when something can be mentally simulated, it must be ready-to-hand, and vice versa. In linking mental simulation with what Heidegger argues about readiness-to-hand, perhaps we can illuminate both phenomena, and we can improve on Heidegger's system by removing its self-imposed conceptual limits.

6. Practical principles for game studies and design

The phenomenological and postphenomenological analysis of ASCII Roguelikes reveals concrete design principles that emerge from the interplay between mental simulation and readiness-to-hand. I will briefly consider three here that bridge (post)phenomenological theory with practical game design considerations.

Symbolic Consistency and Cognitive Transparency. The ready-to-hand state depends on stable, predictable relationships between symbols and their referents. Roguelikes achieve this through conventional mappings ('@' for player, 'k' for kobold) that become increasingly ready-to-hand through repetition. This consistency

allows players to develop automatic mental simulations of game states, similar to how chess players recognize piece configurations without consciously analyzing each square. The principle extends to any interface using abstract representations—consistency reduces cognitive load while enabling deeper engagement with underlying systems.

Progressive Disclosure of Complexity. The transition from unready-to-hand to ready-to-hand suggests expertise develops through scaffolded exposure. Traditional Roguelikes implement this by introducing basic symbols first (simple enemies, obvious terrain) before layered complexities (polymorphing creatures, hidden traps). Modern Roguelikes like Brogue enhance this through color-coding that creates additional symbolic layers without abandoning ASCII's minimalist aesthetic. This graduated approach mirrors skill acquisition in domains like music notation or mathematical symbolism.

Breakdowns as Meaningful Failure States. Heidegger/Ihde's concept of 'breakdown' gestures towards the fact that the objects we use and their place in our worlds forcefully show themselves when they break, when they cease to fulfill their purpose, and the task(s) we use them for are interrupted. Breakdown could go some way towards explaining why permadeath works pedagogically in Roguelikes. When players misidentify acid as a health potion, the resulting death creates a memorable, affective, embodied lesson. Unlike conventional games that might pause to explain mechanics, Roguelikes trust players to reconstruct their errors through post-mortem simulation. This design philosophy could inform educational games seeking to balance challenge with learning.

Perhaps part of the uniqueness of ASCII Roguelikes lies in how they make the ready-to-hand process visible. Where graphical interfaces hide their symbolic foundations beneath representational art, ASCII Roguelikes lay bare the cognitive work of meaning-making. This transparency offers value for designing training simulations where abstract representations prevent over-reliance on visual cues, accessible interfaces that substitute visual complexity with learnable symbolic systems, or experimental games exploring the boundaries of player semiosis. The principles show the potential for phenomenological concepts moving beyond theory to inform concrete design decisions about player cognition and interface literacy.

7. Conclusion

I hope to have shown, by using 'Roguelike' video games as a case study, that the neuroscientific concept of 'mental simulation' can be put into productive, mutually illuminative dialogue with the phenomenological concepts of 'readiness-to-hand' and 'intentionality'. In traditional Roguelike games that use ASCII graphics, the player goes through a process of familiarization in which their engagement with the graphics moves from being conscious to unconscious until they reach a point where they have become habituated, and they can decipher and use them without thinking. I have argued that this process can be identified with the phenomenon that Heidegger describes as 'readiness-to-hand' and charted the stages that the player's intentional disclosure of the ASCII graphics goes through in the process of an object becoming ready-to-hand. Building on this analysis, I argued that mental simulation is intimately

connected to and involved in this process and that the process of an object becoming ready-to-hand parallels that process of acquiring the capacity for mentally simulating interaction with an object, a process we can perhaps describe as "incremental simulation", following Michelle Liu [37].

By framing player adaptation in phenomenological terms, this analysis offers game studies a vocabulary to describe how mastery emerges in abstract systems. Future work could test these claims empirically—e.g., via player surveys or eye-tracking studies—or apply them to hybrid interface games, which blend ASCII and graphics. Phenomenology, often critiqued as abstract, thus proves actionable in designing experiences that scaffold embodied learning. I used this line of argument as a basis on which to mount a critique of Heideggerian phenomenology, which points out how problematic its limitations are, limitations that are often self-imposed by its author in the form of a deliberate refusal to engage with more established concepts like 'consciousness' and 'mind' and a lack of serious treatment of embodiment. I believe that such a project is relevant to the increasingly popular research program of 'postphenomenology', which takes inspiration from classical phenomenological frameworks, applies them to technology, and uses this analysis to improve upon the most problematic aspects of these classical frameworks.

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Notes

[1] Heidegger insists that the object of his analysis, 'Dasein', is not equivalent to 'human being'. But there are serious problems with this that are beyond the scope of this paper which I have discussed at length elsewhere. Human beings are clearly an instance of Dasein and everything Heidegger says about Dasein can be applied to human beings, so for our purposes here I will refer to Heidegger's analysis as one that concerns human beings. For discussion of these points, my article *Heidegger's Philosophical Anthropology of Moods* can be consulted.

[2] There are 99 thousand subscribers on the 'Roguelikes' Reddit page, for instance, compared to the 5.6 million and 1.6 million people subscribed to the *Fortnite* and *GTA Online* Reddit pages. However, the Roguelike fanbase is remarkably dedicated.

[3] *Dwarf Fortress* now has a Steam version which uses non-ASCII graphics, but the rest of this point remains valid.

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