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# magazén

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# **Megadungeon**

edited by Paolo Berti, Stefania De Vincentis, Gabriele de Seta



# A Brief Editorial Note on Relations and Megadungeons in the Digital and Public Humanities

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Università Ca' Foscari Venezia, Italia

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## Paving the Way for Our First Guest-Edited Issue

After four years of deep methodological reflections on our scholarly field, we are pleased to announce the publication of the first guest-edited issue of *magazén*, thus hopefully kickstarting a new trend in our Journal's historical record. Furthermore, we are glad that this second issue of our 2023 volume embraces this year's topic, centred on the concept of "Relations" as an intrinsic characteristic of Digital and Public Humanities (Fiormonte et al. 2022), in a quite unexpected way. Guest-Editors Paolo Berti, Stefania De Vincentis and Gabriele de Seta indeed make their point in articulating the scholarly principle of relation-building in the Digital Humanities as seen from the perspective of megadungeons. In this sense, the dungeon is seen both as a conceptual and operational framework for the relational model of knowledge building, as well as a virtual realm of spatial and temporal interdependencies. Resulting from an international symposium held in Autumn 2022 at the Venice Centre for Digital

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This introduction paper was mutually agreed on by the Editors-in-Chief of *magazén* with the precious support of the Journal Manager Elisa Corrà, who was instrumental in coordinating the editorial work of this guest-edited issue

and Public Humanities,<sup>1</sup> the topic for this guest-edited issue neatly fits in the interpretation we gave of our research field as a domain prone to bridging experiences between different disciplines, as well as taking from gaming techniques and linking computational models to cultural manifestations (Marty 2010). Even inside the virtual articulation of the Megadungeon, the papers collected in this issue prove that relationality maintains a very humanistic character as a model for connected knowledge-building typical of human societies and, as such, a core topic of Digital and Public Humanities (King, Stark, Cooke 2016).

Closing the fourth yearly volume with a guest-edited issue, right after having reached SCOPUS classification, opens up new possibilities for *magazén* that we are eager to discover in the forthcoming years. As a matter of fact, with our new call for abstracts we further resolved to accept any submission without the constraints of a particular topic, thus resembling a true public house as the so-called ‘magazén’ at the time of the Venetian Republic (Tassini [1863] 1970, 364-5).

We cannot but express our most sincere gratitude to the guest editors of this issue, as well as to all experts and scholars involved in the peer review process, which is always very time-consuming but so relevant to uphold high standards of academic quality, particularly in such a rapidly evolving domain. Our gratitude, as usual, also goes to our Advisory Board members, the published authors, the magnificent members of our editorial board, as well as to our publisher’s team.

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**1** The international symposium “Megadungeon: New Digital Volumetries in Art and Media”, Ca’ Foscari University of Venice, 4 October 2022. Programme: <https://www.unive.it/data/33113/2/63932>.

# Into the Megadungeon: An Introduction

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Università Ca' Foscari Venezia, Italia

Stefania De Vincentis

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## **1 A Model for Digital Complexity**

The digital is increasingly complex: not merely a parsable sequence of zeros and ones, but a layered, fragmented sprawl of interconnected and interdependent assemblages. In the words of Matthew Fuller: “Complex objects such as media systems [...] have become informational as much as physical, but without losing any of their fundamental materiality” (2005, 1).

This complexity poses a constant challenge to the representational schemas through which fields like the Digital Humanities and media art make sense of the digital and its sociocultural implications. Concepts like virtuality, multidimensionality and datafication affect a strong pull towards disembodied, abstracted imaginaries of the digital. At the same time, media theorists consistently argue for the renewed usefulness of spatial thinking, using architectural, navigational or topographical metaphors to map out the contours of emerging digital assemblages. Building on the ‘spatial turn’ proposed by post-modern geographers in the second half of the twentieth century (Harvey 1989; Soja 1989; Thrift 2008), several authors have conceptualized an increasingly layered, multidimensional and networked digital

ecosystem in terms of volumetric space (Kitchin, Doge 2011), geological depth (Parikka 2015), or computational infrastructure (Bratton 2015). This special issue follows in the footsteps of these proposals and outlines a new model capable of encompassing the complexity of contemporary digital ecosystems: the ‘megadungeon’. The articles included in this collection approach the megadungeon model from different angles and scales, contributing to an exploratory, speculative, and necessarily partial mapping of this media theoretical framework.

The megadungeon concept originates from role-playing games as an expanded version of the dungeon, a maze-like, subterranean geographical space for adventuring that has been cemented as a spatial trope in games like *Dungeons & Dragons* and countless other ludic narratives across media. While dungeons are usually limited to a few levels of rooms and corridors that are comprehensively mapped by the game master or designer and explored by players as part of their adventures, megadungeons develop at much larger scales. A megadungeon is usually the main setting for a whole adventure, functioning as a game world of its own: it unfolds over a large number (at times potentially infinite) levels, it sustains enclosed ecosystems and complex societal dynamics involving playing and non-playing characters, and it is not meant to be explored and mapped in its entirety. Given their scale, megadungeons are often procedurally generated as the game progresses through random tables, variable parameters or more complex algorithmic calculations, and players can spend months or even years delving into their depths. Despite the term’s origins in Gothic and fantasy literature, its conceptual architecture of intricate, multilayered structures stacked on top of (or nested within) one another does offer several productive correlations with contemporary digital ecosystems.

This special issue argues that the megadungeon can be conceptualized as a model of the digital in at least four key aspects. First, the infrastructural entanglement of the megadungeon’s spatial layout of halls, rooms, caverns, tunnels, conduits, pits, shafts, etc. maps onto various metaphors of media communication based on channels, pipelines, networks and stacks. Second, as a geographical feature massive enough to sustain a living ecosystem of its own, the megadungeon echoes with the planetary scale of Mumford’s megatechnics or Bratton’s accidental megastructure. Third, the parametric or algorithmic logics through which megadungeons are procedurally generated resemble features of contemporary digital media systems such as social graphs, personalized feeds, curated experiences, and even synthetic content. Fourth, as a context dominated by a ludic paradigm (Huizinga 1949), the megadungeon prefigures a gamification of everyday life that goes beyond the domain of videogames and encompasses most contemporary forms of digital mediation. These four aspects allow us to conceptualize the megadungeon beyond its ori-

gins in fantasy role-playing games as a spatially deterritorialized and parametrically generated megastructure characterized by emergent complexity and layered expansion. The proposal we advance is the following: the megadungeon can serve as a productive model for the intricacies of digital mediation.

## 2 A Metaphor for the Database, Archive, and Museum

The megadungeon model bears a certain resemblance to the multilayered field of the Digital Humanities. While the former privileges vertical sprawl and nested structures, the latter expands mostly horizontally and arboreally, encompassing a forest of ramifications. The megadungeon's parametric endlessness and the impossibility to fully enclose its volumes and map its geographies resonates with the difficulty of successfully following a single path in the multitude of "non-definitions" that characterize the macro-field of Digital Humanities (Thompson Klein 2015). The blurring of the boundaries between various domains of humanistic knowledge is profoundly connected to the digital, which enables the creation of interdisciplinary networks and methodological approaches between fields like literature, history, archaeology, social culture and art, just as it affords the profound transmediality that characterizes the megadungeon. The Digital Humanities field is today

much broader than it once was and includes not only the computational modeling and analysis of humanities information, but also the cultural study of digital technologies, their creative possibilities, and their social impact. (Schreibman et al. 2016, XVIII)

Being brought into academic debate from popular culture, the megadungeon also reinforces the broader outlook of the public humanities towards the social and cultural effects of technology.

As Paolo Berti's contribution notes, by following Lev Manovich's reading of Panofsky, the database is the symbolic form of the computer era (Manovich 1999), and a procedural affinity links the megadungeon model to the electronic, metalinguistic, or standardized formats of archives, collections of documents and works of art. This link between the megadungeon model and the Digital Humanities, as well as to the public humanities, is strengthened by the logics of playfulness and interaction, through which these two domains find greater consonance and overlap (Burdick et al. 2012).

The need to organize and store knowledge in formalized and interoperable structures also requires new ways of visualizing knowledge, including 3D simulations, image clusters and AI-generated media, which are governed by data but subordinated to user interaction.

Thus, the ludic dimension of the megadungeon relates with experiences common to both video game players and users exploring virtual museum collections. This visionary museum that Johanna Drucker tries to imagine with skeptical curiosity leads her to question whether this ecosystem could really be “the most formidable resource for art history and cultural memory production ever conceived” (Drucker 2019, 2.14), or if the most likely outcome would be disappointment.

The concept of ‘digital depth’ proposed by Gabriele de Seta’s contribution to this special issue maps closely onto the levels of depth through which the museum’s accessibility is layered, suggesting a way of rethinking collections and making them open to all possible participants: scholars, practitioners, technicians, amateurs, artists, curious visitors and flâneurs. The list of nine main characteristics of the megadungeon identified by Asa Roast’s article also reflects features of the digital museum such as the absence of borders, the ecological specificity of collections, and the dynamism of its dwellers, who evolve and adapt their perception and experience according to the curators’ strategies.

More generally, digital databases, archives and museums are not linear environments, but each of their rooms, corridors, and connections intersect paths where different periods, collections and materials converge, offering several ways of moving through their spaces, following a diachronic or synchronic temporal sequence. At the same time, they share the risk of boredom, of the incomprehensibility of the knowledge they propose to convey, and of the abundance of multimedia elements that distract from the observation of any specific cultural object. The more we delve into collections like digital databases, archives and museums, the greater the complexity and detail of the resources they offer, so that in the end their exploration itself becomes one of the central objectives of the visit - but perhaps not the only one, depending on what the experience design suggests. Finally, the concept of the digital museum, like that of the megadungeon, remains more of a legendary idea than a fully conceived one. It is rooted in the history of art and culture and lives through metamorphosis and speculation. The megadungeon can indeed be, as Carolina Fernández-Castrillo’s proposal suggests, “a cartographic metaphor of our daily ramblings as postdigital flâneurs” into the entries of an online database, inside a virtual museum, or along the shelves of a digital archive, equipped with the same curiosity of delving into a dungeon of fantasy and without the need to find only one possible exit.

### 3 Delving into the Megadungeon

The symposium *Megadungeon: New Digital Volumetries in Art and Media* (Venice, October 4, 2022) was an important first step to conceptualize the megadungeon and, in the tradition of role-playing games, gather a well-rounded adventuring party of contributors for a special issue of the *magazén* journal. The seven articles featured in this special issue all respond to our invitation to speculate on the megadungeon as a metaphor, framework or model for the digital that is capable of capturing its complexity and thereby open up new perspectives on digital media practices, technologies, and aesthetics. The special issue is organized in two complementary halves: a more theoretical one composed of three articles that sketch the contours of the megadungeon, and a more case-study oriented one consisting of four articles that zoom into specific aspects of this new digital volumetry.

Asa Roast's contribution opens the special issue with a historical discussion of the dungeon as an imaginary, interconnected underground space that, through the mediation of fantasy narratives and role-playing games, has evolved into both a project for spatial organization and a practice of play. Through a Lefebvian interpretation of the megadungeon as a procedurally-generated, potentially infinite extension of the dungeon, Roast articulates this as a metaphor for new configurations of urban and digital ecosystems. Along parallel lines, Paolo Berti describes the megadungeon as an anti-navigational and generative model that captures the interconnected and multi-layered nature of the digital media landscape. Connecting the megadungeon to technological transformations, Berti discusses how this vertical model mobilizes connections to the spatial and temporal grammar of the underground as a nonlinear, deep site of unpredictability that has influenced fields ranging from media theory to arts. Gabriele de Seta expands this model into the digital realm by questioning the metaphors of surface and flatness that characterize common imaginaries of communication and computation. By investigating the concept of 'digital depth' from early ludic narratives and cyberspace rhetoric's to the deep web and machine learning, this volumetric speculation foregrounds depth as an underlying feature of digitally mediatized societies.

Building on this theoretical framework, Nicolas Nova revisits the monster manual format of role-playing games to describe the 'digital menagerie' of entities and creatures inhabiting the complex media ecosystems that are accessed through computers, smartphones and gaming devices. By mapping out a variety of digitally-native beings, Nova seeks to offer a guide for coexistence with the megadungeon's emerging ecosystems. In a similar spirit, Luigi Monteanni identifies the viral expression 'goblin mode' as a political aesthetic

with clear socioeconomic contours, connecting it to the shared experiences of underground musicians operating in global urban settings and demonstrating how these artists use their informal practices to respond to marginalization by tapping into the layered spaces of the internet. Rebekah Rhodes explores the enduring influence of Hieronymus Bosch's masterpiece *The Garden of Earthly Delights* on digital and new media art through the work of artists such as Miao Xiaochun, Michael Bielicky, and Kamila B. Richter, illustrating how the triptych's multi-layered structure, bursting with countless narrative vignettes and imaginative events, demonstrates its power to create worlds. For Carolina Fernandez-Castrillo, the procedurally-generated nature of the megadungeon underpins the human-machine collaboration of Web 3.0. She revisits Walter Benjamin's ideas in the context of digital media, using Mario Klingemann's Botto Project as a case study to investigate digital art production and the creation of alternative markets through participatory dynamics.

In this special issue, we share the findings of seven exploratory forays into this emergent model of digital complexity. Spanning disciplines and methodologies, all contributors have approached the megadungeon from different perspectives, finding original entry points and charting innovative ways of understanding the digital. We hope that this is only a beginning, and that other researchers will find the megadungeon to be a productive and useful model for their own inquiries. Theoretical frameworks and conceptual models are increasingly important tools to orient studies of the digital, as they can not only guide research questions and theory-building but also help scholars navigate ecosystems of new creative practices and material resources. More broadly, the megadungeon could also stimulate further debate on the spatial imaginaries of the digital by recognizing that bottom-up experiences are as important as the top-down efforts to understand new media. As a model characterized by procedural logics, emergent complexity and layered expansion, the megadungeon has no fixed entry point nor clearly defined boundaries; no external point of view can encompass it, no map can fully represent it - the only way to explore it is through partial, playful engagement with its vertiginous, multidimensional, phantasmagoric depths.

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# A Preliminary Geography of the (Mega)Dungeon Spatial Practice and Tabletop Role-Playing Games

Asa Roast

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**Abstract** The dungeon and megadungeon are imagined spaces of a complex and interconnected network that emerged in fantasy tabletop role-playing games (TTRPGs) from the 1970s. As a space distinctive to early TTRPGs it is characterised by asymmetry between the dungeon as an object of design, and the dungeon as a practice of play. The discourse of games manuals, independent publications and blogs emerging from the TTRPG scene tracks the origins and evolution of these procedural and labyrinthine spaces, and the distinct spatiality of the megadungeon as a geographical object. The space of the megadungeon can be mapped onto a Lefebvrian triad of spatial production: it exists as a representation of space produced by a dungeon master or algorithmic generation that forms an infrastructure of play; it exists as a spatial practice emerging out of the unique experience of players traversing the megadungeon; and it forms a space of representation by seeking to imagine the megadungeon as a living fictional world, intersecting with the assumptions about spatial norms and relations originating in tropes of fantasy fiction. Surveying these trends in conversation with recent insights from human geography illustrates the distinct spatiality of the megadungeon that is derived from its origins in TTRPG play. This brings forward important questions for the utility of the megadungeon as a metaphor for digital media ecologies, and asks whether the metaphor could be extended to enrich conceptual debates in human geography.

**Keywords** Tabletop role-playing games. Critical geography. Spatial practice. Mapping. Play. Infrastructure.

**Summary** 1 Introduction. – 2 An Infrastructure of Play. – 3 Dungeoneering. – 4 Gygaxian Naturalism. – 5 Return to Surface and Conclusions.



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## 1 Introduction

The megadungeon is introduced in this issue as a metaphor for a complex and intricate volumetric structure that is layered, interconnected, labyrinthine, procedural, and gamified.<sup>1</sup> It is posited as a representation of media ecology, drawing on concepts of volumetrics and vernacular notions of depth within digital media.<sup>2</sup> This text seeks to return to the dungeon as it originally emerged and was played in the tradition of fantasy tabletop role-playing games from the 1970s onwards, and to consider how this practice intersects with the contemporary spatial imaginary of the megadungeon. The purpose of this archaeology of the megadungeon is not just to excavate the origins and evolution of these procedural and labyrinthine metaphors in games manuals and blogs. Rather, it seeks to construct an account of the specific spatiality of the megadungeon as a geographical object and its implications for contemporary imaginaries of human (and inhuman) space. This genealogical excavation of the megadungeon seeks to explore the topic through playful interaction with current thought in human geography, considering how it can be interpreted through geographic praxis and might likewise enrich current geographical concepts.

A dungeon in the world of games describes a semi-open landscape across which various quests (i.e. objectives) can be played (Aarseth 2005). A megadungeon describes a particularly large (possibly endless) dungeon which can never be fully conquered or explored by players. It likely contains multiple factions of hostile life within it and is often generated according to procedural rules which allow it to extend infinitely. This article takes as a starting point the general concept and history of the dungeon and examines how aesthetic tendencies within this concept came to be emphasised in the ultra-extended and ultra-complex megadungeon.

Palmer (2019) suggests the dungeon is a common trope within games: a heterotopic convention of space which exists according to rules different to those of the normal world. I wish to extend the study of the dungeon as generic space through an exploration of its existence in tabletop role-playing games (TTRPGs). By contrast to wholly digital games, the TTRPG refers to games primarily played through structured conversations: the construction of shared and improvised narrative fiction between participants based on a set of rules which constitute the constraints of this fictional reality (Montola 2008; Arjoranta 2011). In the genre of fantasy this is typified by Dungeons and Dragons (Gygax, Arneson 1974), but has also been

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<sup>1</sup> See Berti, in the present issue of the Journal.

<sup>2</sup> See de Seta, in the present issue of the Journal.

expanded to many other rulesets and settings, and has significantly influenced the design of video games.

This text is thus reliant on multiple sources of knowledge which relate to the (mega)dungeon as a geographical space. The TTRPG hobby has produced thousands of iterations of the dungeon as a designed space since the 1970s, differing from video games in the low barrier to entry for prospective dungeon designers. As TTRPG dungeons are constructed primarily through readily accessible and ephemeral media such as 2D diagrams, texts, and conversations, they constitute a genre of imagined space which lends itself to modification malleability, and experimentation. The inherent tendency towards a DIY ethos in the design of a dungeon mirrors the hackable and patchable spaces created by contemporary networks of digital media. Designing spaces of engaging TTRPG play is also a necessarily social practice which encourages copying, borrowing, and translating ideas between different designers and players. The dungeon discourse of TTRPGs then consists of commercial publications but also self-published or freely shared maps, suggestions, and adaptable ideas. The genre of TTRPG dungeons has a canon of 'classics', periodisable trends, and a lively critical discourse (Horvath 2023; Bell 2021; Deterding, Zagal 2018).

In developing a preliminary geography of the megadungeon the discourse of dungeon designers and players stretching across blogs, forums, publications, podcasts, and reviews has provided an extremely valuable source of knowledge on the dungeon and its use.<sup>3</sup> I am conscious that this popular discourse is already developing its own sophisticated 'dungeon philosophy' and a rich and experimental discourse on the spatiality of play. Thus, a large part of the knowledge I present here is derived from these sources with specific authors cited where possible, interpreted through the wider lens of human geography.

The (mega)dungeon is an imagined space which is created and experienced in very different ways depending on an actor's relationship to it. For the designer or 'dungeon master' (DM) the dungeon is in principle a space of perfect authorship where they have complete control as planner and creator, sketching out a dungeon on paper before a game.<sup>4</sup> For the player or 'player character' (PC) the dungeon is

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**3** The rich online discourse around the so-called 'Old School Renaissance' (OSR) in tabletop role-playing games is particularly important for my analysis. This is a loose term used by designers and bloggers who endorse a minimalist, process-driven and DIY ethos and aesthetic in fantasy role-playing, nominally contrasting this 'old school' attitude to apparently more commercial, narrative-oriented, and rules-heavy recent trends in fantasy games (Gillespie 2012; Gillespie, Crouse 2012; Bell 2021). OSR practice also typically centres the dungeon as an infrastructure of play, for reasons outlined in the second section of this article.

**4** While it is the presence of a human DM which has typically distinguished TTRPGs from computer-based RPGs, a growing genre of single-player or DM-less TTRPGs challenges the notion of an authorial DM as a necessary precondition of improvisational

a space in which agency and knowledge about the space is hugely restricted, requiring them to proceed cautiously through the dungeon with frequent questions asked of the DM to ascertain the properties of the fictional space. The geography of the megadungeon is notable for being constituted through this highly asymmetric social practice between architects and users, which gives rise to a distinct spatiality.

Participation and observation in both 'sides' of the space of a megadungeon as a DM and PC playing with friends during and after my PhD, has granted me some insight into the different contours of geographic thought and praxis which this spatial practice intersects with. I thus also draw on my own (auto)ethnographic experience as a designer and player of dungeons, and the tacit knowledge derived from reflexive ethnography of my own hobby documented in notes taken before, during and after games and conversations with fellow players (Butz, Besio 2009). Reflective discussions arising out of this experience gave rise to the Serious Play Seminar Series at the University of Leeds which facilitated a series of conversations (recorded as a podcast) with games designers, academics participating in games practices, and studying role-playing games (Thurley et al. 2022).

To begin thinking about the megadungeon as a geographical space it is necessary to examine how the players and designers of these spaces distinguish the dungeon from other forms of fictional space which might be encountered when constructing a shared narrative fiction in a TTRPG. As an environment which might be encountered in a fantasy game the dungeon should be differentiated from other complex physical environments which players might usually encounter such as human settlements and wilderness areas. An influential pamphlet by the dungeon designer Jason Cone (2007, 22) posits the dungeon as a "mythic underworld" in which many of the typical conditions of familiar human environments are overturned and where the environment is obstructive if not actively hostile to players attempting to pass through. This takes the form of environmental hazards (darkness and hidden spaces), physical obstructions (traps and barriers) and lifeforms which may be hostile (monsters). On this basis he enumerates nine characteristics of a megadungeon:

1. It is big and has many levels; in fact, it may be endless.
2. It follows its own ecological and physical rules.
3. It is not static; the inhabitants and even the layout may grow or change over time.
4. It is not linear; there are many possible paths and interconnections.
5. There are many ways to move up and down through the levels.

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play, and the use of large language model 'artificial intelligence' to substitute the role of DM has proved popular amongst some players.

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6. Its purpose is mysterious or shrouded in legend.
7. It is inimical to those exploring it.
8. Deeper or farther levels are more dangerous.
9. It is a (the?) central feature of the campaign. (Cone 2007, 23-4).

Other writers have put forward alternatives definitions and criticised the focus on the mythic and otherworldly aspects of the dungeon in Cone's definition as too narrow and bound to specific genres of heroic fantasy.<sup>5</sup> Bloch (2022) indicates some useful additional criteria which more clearly differentiate a *megadungeon* from a regular dungeon: it is a space which cannot be "cleared" (i.e. a space which cannot be completely emptied of danger or conquered by a player - it is a permanently inimical and restive terrain); it may not necessarily be a subterranean space in the fictional universe but could be any kind of self-contained network of enclosed spaces (e.g. a ruined city, a forest, a swamp). He also notes a secondary characteristic that is important to the latter section of my analysis: that the megadungeon is generally a space which contains multiple factions of life (referring to different groupings of inhabitants with varying and often antagonistic relationships), meaning that the dungeon forms a political terrain which players must navigate.

The megadungeon that emerges from this set of elements is one characterised less by the way it is described or 'dressed' in the fantasy world of a game, and more about a specific kind of spatial agency which is prompted by the encounter between the player and the dungeon. Besides the typical Gothic clichés of the dungeon-as-trope such as dark stone-lined corridors, dusty tombs equipped with deadly traps, and surprise attacks by giant spiders, the dungeon can be interpreted beyond these tropes as a formal spatial practice. The TTRPG dungeon is a space-based platform which could take on a variety of settings distinct from typical Gothic aesthetics.

The dungeon provides an infrastructure for expressing agency. It is a designed or generated space which is encountered by players as a series of challenges (environmental, physical, lively) while also offering some freedom of choice in how or where these are met or surpassed. The dungeon provokes in the subject encountering it a particular kind of mobility which is required to pass through the space ('dungeoneering') and is presented as a space with distinct (though not immediately legible) rules which form complex systems, with the expectation that those passing through the dungeon may come to understand these rules and engage with them towards some specific ends.

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<sup>5</sup> Bloch 2017; Rossi 2017; Dell'Orto 2017; Spalding 2017; Krombach 2010; Bobjester 2008.

These three aspects can be mapped onto Lefebvre's (1991, 38-9) triad of spatial production which has been so influential in human geography. The dungeon comes into being as (1) 'representation of space'; a space conceived by a designer. It is created out of text and diagram by a DM who acts as an author, planner, and social engineer of the dungeon. The dungeon is encountered by players as (2) 'spatial practice'; a space which they perceive through their (fictional) senses as described by the DM and which they are tasked with traversing. Finally, a dungeon emerges as (3) 'representational space'; a lived space which appears to take on a life of its own through the system of signs and symbols which arise from play. The dungeon is a space which is lively with complex social and ecological systems. This tri-alectic production of space provides the structure for the following sections, exploring the space of the megadungeon across three levels, before returning to the surface for concluding points.

## 2      **An Infrastructure of Play**

The popularity and ubiquity of the megadungeon as a structure in games reflects its history as a space designed for play. The spaces of the megadungeon are designed to encourage and anticipate a certain form of agency which presents those exploring the dungeon with challenges, meaningful choices, tantalising uncertainty, and narratively satisfying outcomes. Certain formal qualities of how a megadungeon is designed reliably give rise to engaging puzzles. The megadungeon is an infrastructure which facilitates play, and like all infrastructures instantiates a spatial practice which contains transforms the affective and agential relations of those who interact with it (Furlong 2011; Rao 2014; Bosworth 2023).

Discussion of the principles of designing a megadungeon (or a smaller dungeon) often highlights the way that the design of the dungeon structures and focuses a player's agential encounter with a fictional world. One of the peculiarities of tabletop role-playing games as a form of play is that the player's agency is uniquely open and not restricted by interpretation through a non-human client with a limited range of actions, as in video games. Instead, there is a nominally infinite range of detail and possibility for interaction with the world, structured through a conversation between the DM and the PC. A player encountering a new dungeon space can ask for its objects to be described in limitless detail ('What is the floor made of? What does this book smell like? What colour are the goblin's eyes?') and can engage in a limitless range of interaction with the space ('What happens if I dig through the floor? What happens if I tear out a page of the book and eat it? Will the goblin become our friend if we sing a song to them?'). This presents a challenge for both parties. For the

DM this can require an enormous amount of preparation to adequately think through the complexities of a fictional world and anticipate the ways in which PCs may interact with it. For PCs this range of possibility can be daunting, and result in them feeling overwhelmed by the radical openness of TTRPG play.

The structure of a dungeon as a network of interconnected discrete spaces imposes clear limits on these possibilities. As one prominent DM and dungeon designer describes, “dungeons constrain a complex world and bound it by walls, and doors, and floors, and ceilings, and within these boundaries you have near infinite space to create” (Colville 2018). For the DM the dungeon vastly limits the amount of preparation they have to undertake to present a realised fictional world by allowing them to prepare a series of discrete spaces which restrict players to certain pathways but nonetheless present them with a range of freedom and agency in how they traverse the network.<sup>6</sup> For the players the dungeon is encountered as a series of discrete spaces which pose discrete challenges where their goal is often clear: to successfully transverse the space and reach the next room, to advance to the next level of the dungeon, to acquire the object or slay the monster which constitutes their quest (Aarseth 2005). The dungeon drastically limits the agency of both DM and PC, but in doing so re-structures the limitless possibilities and infinite space of a fictional world into a series of discrete spaces and puzzles which can be overcome in novel and inventive ways. In this sense the megadungeon constitutes an infrastructure of play because it structures play through a series of bounded spaces of problem-solving.

This infrastructural aspect of the megadungeon also extends to the way in which it structures the social dimensions of play. TTRPGs are typically played in a series of scheduled sessions (usually lasting 2-4 hours) by a group of players, with these individual episodes linking together to constitute a larger campaign. The megadungeon provides a structure for these series of games, with each individual session narrating a particular expedition into the dungeon (building on the explorations of previous forays) with a changeable cast from session to session (Alexander 2011a). This is particularly important in relation to megadungeons which by virtue of their size and complexity are generally impossible to fully explore or map. Thus, the megadungeon is not just a single site of play, but a wider infrastructure

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<sup>6</sup> Within this article, the designer of a dungeon and its DM are often assumed to be synonymous as ‘architects’ of the dungeon. However, this role is not necessarily identical. Specific designers may be authors of dungeon maps and plans (such as Jennel Jaquays, see below), which may then be played by separate groups of DMs and PCs. The equivalence of these two roles in this article is based on the assumption that in practice DMs frequently adapt and ‘hack’ pre-designed dungeons on the fly to suit the needs and preferences of themselves and their PCs, and so they can be treated as co-authors of the space.

for continuous, repeated play across an entire campaign – a complex spatial field in which repeated explorations can be carried out. This point also highlights the methodological analogy between the play engendered by the megadungeon and typical geographic methods: the dungeon delve as fieldwork.

Nguyen (2020) undertakes a philosophical enquiry into games as an art form and concludes that games achieve an aesthetic effect by defining knowable goals and providing players with rules-bound agency to achieve those goals. Games then constitute an agential art by providing a gap of indeterminacy for players to occupy in their striving for goals which form a focus of the players' attention. The geography of a megadungeon provides a clear representation of this agential art constituted as space: the DM designs certain constraints on agency (the layout of the dungeon itself and its hostile terrain) and attentive foci (quest goals, treasure, and monsters) which players can nonetheless struggle towards through novel and innovative applications of their agency.

The challenge in designing a dungeon as an effective infrastructure of play is then to create a space which is aesthetically rewarding to explore and overcome through discrete challenges. It is a space which must be basically perceptible and knowable to players so that they appreciate the verisimilitude of the fictional world and act within it, but which also must be (at least initially) largely unknown and obscure. If a megadungeon abandons any consistency or repeatedly frustrates the attempts of players to traverse it will cease to be a game. For example, if a DM designed a dungeon such that rooms or their physical properties were arbitrarily transformed or rearranged every time the players passed through a door, it would cease to be perceptible or knowable. The classic dungeon *Tomb of Horrors* (Gygax 1978) was designed to deliberately frustrate complacent players by including arbitrary traps and dangers which could not be perceived in advance (exemplified by a misty portal which instantly results in death by any who pass through it), but nonetheless presented the dungeon as a series of euclidean spaces which largely obeyed the laws of physics familiar to human reality. Conversely, a megadungeon that presented players with a perfect map of the space and its dangers at the start of a played session would cease to be an enjoyable or rewarding space to encounter. The 'representation of space' which is a megadungeon (as conceived by a DM) must then be legible but largely obscure to players.

With these formal dimensions of a megadungeon established, the possibility for developing an algorithmic basis for generating the map of a megadungeon was quickly exploited. A key element of fantasy TTRPGs has always been the use of randomised elements to produce novel and unexpected outcomes (mostly through the rolling of a die and consultation of a table of outcomes), and it did not take long

for this simple stochastic approach to be applied to the spatiality of the dungeon itself. The first published rules of Dungeons and Dragons emphasised the authorial design of an individual DM in creating a dungeon, stating that it was “necessary for the referee to sit down with pencil in hand and draw these labyrinths on graph paper” (Gygax, Arneson 1974, 3). The rapid digitisation and automatising of the process of dungeon design in the years after this rapidly turned it into an algorithmic and rhizomatic practice.<sup>7</sup> By 1979 the rules of Dungeons and Dragons had taken advantage of this evolving practise and provided a set of random tables which constituted an algorithm for the infinite design of a dungeon which was also “easily adaptable to solitary play” (Gygax 1979, 173), and so removed the necessity of having an individual DM to act as author of the space. Instead, the dungeon could act as a truly processual space, generated on the fly as a PC explored it. Equally the generation and interpretation of a megadungeon by a DM on their own could form a type of processual game in its own rights. The DM can be said to be playing the dungeon itself as they design it, fleshing out the details of the algorithmically generated space with their own fictional narrative (Colville 2018).

Typically, the rules provided for dungeon creation presume a DM is recording the dungeon as a keyed map on a 2D grid of graph paper. The 1979 rules for procedural generation comprised tables which dictated the size, shape and nature of entrances to/from rooms, the frequency with which monsters would appear on different levels, the nature of any traps and treasure within the room (including a sub-table for different kinds of poisonous gas which might be released), in addition to an appendix of ‘dungeon dressing’ which comprised tables of hundreds of different sounds, smells, air currents, furnishings and detritus which might be used to add colour and a sense of place to the environment. The donjon website (donjon.bin.sh 2023) has assembled various iterations of dungeon generation algorithms into a tool which can rapidly generate fully populated and realised dungeons for various different games and settings based on a few inputs [fig. 1]. A rich genre of single player RPG content contains rules for generating game spaces randomly to be played by single PCs without the need for a DM. The ability to generate an infinite stochastic space allows for the possibility of the discrete and single-authored dungeon extending into an infinite megadungeon. If we understand the megadungeon as processual space rather than a pre-determined space, it can constitute a nominally endless infrastructure of play.

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<sup>7</sup> See Berti, in the present issue of the Journal.

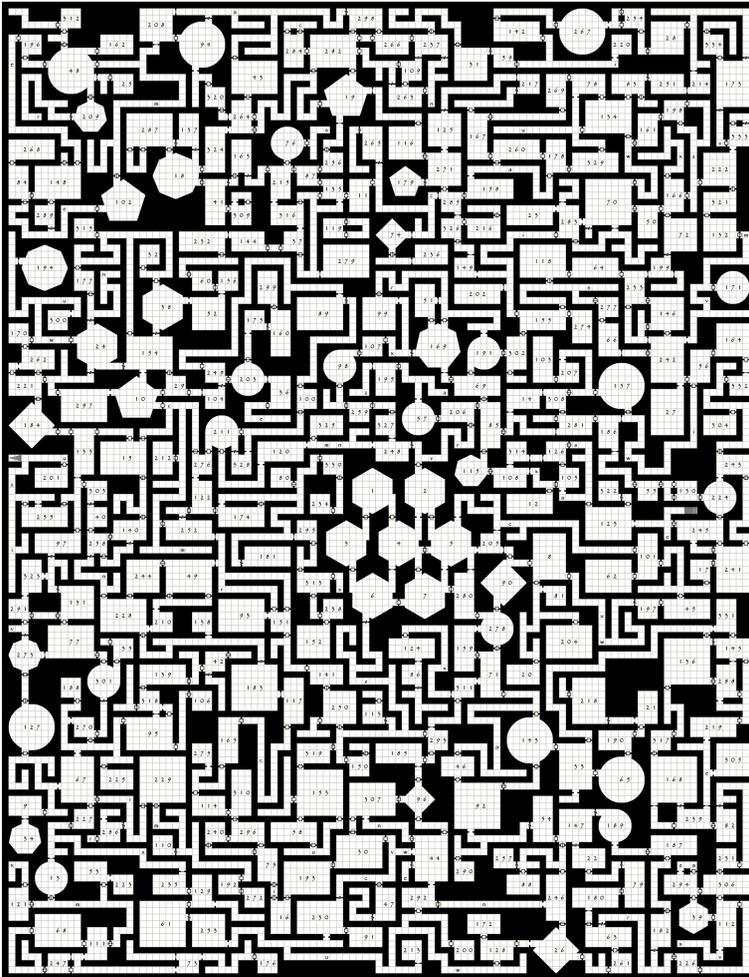


Figure 1 Dungeon map produced through the `donjon.bin.sh` generator

Discussing the affective dimensions of games Nguyen (2020) argues that the effective design of games mirrors urban planning and governance in that it constitutes an ‘architecture of agency’ which uses rules, constraints and incentives “to shape the activity that will emerge from the agency of users” (157). The question of how a dungeon shapes the agency of players towards affective ends resonates with the concept of affective infrastructures (Bosworth 2023). The development of the philosophy of the megadungeon from a single-authored architectural work to a processual space which unfolds a potentially infinite infrastructure of play mirrors recent debates

in urban geography which have focussed on the urban as a processual space which is characterised by extension beyond conventional notions of scale towards global totalities (Brenner, Schmid 2015). This infrastructural quality is also a clear point of comparison between the conceived space of the megadungeon and the gamified platforms of contemporary digital media – to this end its noteworthy that Nguyen (2021) has extended his analysis of games as architectures of agency to argue that contemporary digital media platforms represent a gamification of communication. Beyond its applicability to digital media ecology, the analogy of the megadungeon might offer a metaphor for the tendency towards gamification in the production of spaces of processual extension, operationalisation, incarceration, and extraction which characterise the human geography of planetary urban infrastructures. As an infrastructure of play, the dungeon functions as a platform which introduces standard tropes and formats of agency and chance, re-interpreting the seemingly infinite possibilities of the narrative engine of a TTRPG as a series of discrete agential encounters between the architect (the DM) and their users (the PCs) (Bratton 2015).

### 3 Dungeoneering

Navigating the megadungeon as a player offers a very different way to experience the representation of space conceived by a DM. As an infrastructure of play, the dungeon is designed to provoke certain aesthetic experiences in the PC who must traverse it. The verb ‘to dungeoneer’ arose in early discourse around fantasy TTRPGs to describe the ways in which players navigated these spaces. The term dungeoneering is commonly used to refer to the development of particular skills and knowledge by a PC necessary to navigate the space of a dungeon in a relatively safe manner. While this form of encounter with fictional space is common to dungeons of all scales, the importance of traversing this space took on special significance within the emerging genre of the megadungeon. This section concerns the experience of dungeoneering, and the kind of spatial practice which traversing the dungeon provokes in players.

The dungeon is designed to produce for players an experience of restricted knowledge (uncertainty – the inability to predict what dangers lurk around the corner or beyond the next door) and restricted agency (contingency – the need to rely on the limited skills and resources the explorer has to hand in order to deal with any dangers or challenges). However, dungeons which successfully produce a satisfying and rewarding experience of play should allow for the possibility of making the space legible and safer to travel through. That is, that through effectively deploying their limited resources, the player can

develop useful knowledge about this uncertain and dangerous terrain. We can then ask what kind of spatial tactics and agencies the megadungeon requires of those who encounter it: what is it like to play through a megadungeon, and what kind of geographical knowledges and experiences are produced?

To answer this, we can return briefly to consider how a dungeon can be designed to allow kinds of nonlinear play. The games designer and illustrator Jennell Jaquays started her career by creating dungeons for play in *Dungeons and Dragons*, and later went on to contribute to the design of the *Quake* series of computer games (Mobygames 2023). Analysis of her writing and design of megadungeon-like spaces has been particularly prominent in online discussion of the experience of dungeoneering, as her dungeons are thought to have pioneered principles which produce a particularly satisfying and engaging space to navigate. Jaquays' approach to dungeon design emphasised the importance of creating non-linear dungeon spaces which did not have one single solution or correct path which players would need to discover, but which rather constructed the dungeon as a landscape characterised by complexity and dynamism. These spaces are thus frustrating and difficult to navigate, but also present the PCs with a wide range of resources which can be combined and exploited in novel ways, including those which may not have been anticipated or imagined by the designer themselves. They are thus designed with a degree of indeterminacy about how the space can be traversed, without a pre-determined linear solution. Alexander (2010) coined the verb 'Jaquaying' to describe how dungeons can be designed to encourage this kind of novel and improvisational play, and quoted Jaquays' assertion that "a melding of design intent and fortunate accidents" was the basic principle of effective dungeon design.

Dungeons designed by Jaquays such as *The Caverns of Thracia* (1979) forgo a simple branching layout where players are presented with a series of choices of which space they will interact with (left door or right door). Instead, the dungeon creates complex and integrated spaces which feature loops (allowing players to backtrack on themselves or play through areas in different ways), multiple entrances (providing different experiences depending on the entrance chosen), secret paths and areas (rewarding players who thoroughly investigate the terrain with new spaces and resources), verticality (extending the two-dimensional space of the paper map into three dimensions) and non-Euclidean geometry. Jaquays dungeons are also characterised by incorporating extra-dimensional or nested spaces within 'normal' dungeons. Such designs make the spatial practice of dungeoneering more dynamic and interesting than a series of simple choices by creating a more complex and variable landscape within the overall infrastructure of play provided by the megadungeon. Melan (2006) illustrated this point by producing diagrammatic

representations of classic dungeons as simplified branching paths. This forum user writes that

good map design contributes to the fun of an adventure, and it is not a total crapshoot - there are clearly identifiable design principles which [...] when followed, benefit a given creation. (Melan 2006)

‘Good’ dungeon design from this point of view gives rise to free-form and inventive play, as opposed to the exploration of rigid pre-designed stories. It is notable here that the apparently infinite and procedural space of the megadungeon may not reliably deliver the same narrative satisfaction and good design principles of intentional map design following these principles.

The complexity of non-linear dungeoneering also serves to introduce the spatiality of the dungeon itself as a resource which the players can exploit in their dungeoneering. Secret paths can allow dangers to be avoided, or new angles of attack on adversaries. Enclosed areas of the dungeon can be fortified or protected with traps in order for them to act as bases from which players can venture forth. Elements from one space of the dungeon can be combined with those of a different space in unanticipated and novel ways: a monster can be tricked into falling through a trapdoor or becoming lost in a labyrinth; a hungry dragon can be placated by giving it access to an underground stable of livestock; a portal to an extra-dimensional realm can allow players to acquire a magical tool which allows them to overcome a locked door; an underground community can be persuaded to help the PC to circumvent a danger in a completely different part of the dungeon. These kinds of environments thus resist linear play and often require creative use of space itself to successfully navigate the megadungeon.

The spatial practice of dungeoneering within the massive and multi-level space of a megadungeon also allows the PC a degree of control over the broader coordinates of their experience. One of the key spatial characteristics of the megadungeon is that it is “big and has many levels” (Cone 2007, 23). Levels here refers to the dungeon as a vertical stack, with multiple levels of rooms and corridors placed on top of each other, accessed by staircases or lifts between them. The levels of a megadungeon typically correspond to varying levels of risk and reward. Those levels closest to the surface will offer the least danger (with weaker adversaries and traps) but also the most meagre reward in terms of material treasures acquired. Deeper and lower levels will offer progressively more dangerous encounter but also more substantial rewards. The algorithmic generation of random dungeons takes this into account, with randomised monsters and traps varying depending on the level of the dungeon in which they are generated. The fictional justification for this vertical spatial differentiation

is typically that higher levels of the dungeon are frequently visited by outsiders, so have already been more thoroughly explored, tamed and stripped of treasures than the lower levels (Curtis 2009). Lower levels then represent further degrees of separation from the human world of the surface and will likely contain increasingly weird things and hostile environments (discussed in the following section). This vertical stacking also serves an important purpose in that it allows players a degree of control over the level of danger they will face, while also encouraging a mode of play that resembles variable odds gambling: they always have the opportunity to “push their luck” by venturing deeper into the megadungeon (Milton 2020a).

The ways in which the actual traversal of the dungeon environment is described and imagined is also important here. Early versions of Dungeons and Dragons which tended to be more dungeon-centric in their play emphasised dungeoneering as a slow and methodical process which is quite unlike travelling through normal corridors and rooms. These rules are set out systematically in the edition of the game edited by Moldvay (1981). The party moving through the dungeon must do so slowly and carefully, moving just 120 feet (36.6 metres) in ten minutes of fictional time. They must also rest for ten minutes in every hour, giving an average speed of just 183 metres per hour (which would be further reduced if they were carrying heavy objects such as treasure). Moving any faster will risk attracting wandering monsters. Players are also expected to pay close attention to their surroundings when exploring, searching for hidden traps and secret corridors, listening at doors. The rules emphasise careful resource management. Dungeons are dark and those exploring them will need to bring a large supply of light sources which will need to be replenished: a single torch will burn for one hour, and when the party runs out of torches they will be in total darkness unless they have a magical source of light or a non-human character who can see in the dark. The prevalence of the term ‘dungeon crawl’ to describe dungeon-centric play in tabletop and on the computer RPGs captures the notion that megadungeons are traversed cautiously and arduously. Dungeoneering is a gruelling and exhausting process of crossing a hostile landscape in which players who do not show requisite caution will be at risk of meeting an untimely end. The experience of traversing a megadungeon (in which players might spend days, weeks, or months underground) is presented as a viscerally challenging experience.<sup>8</sup>

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<sup>8</sup> This focus on caution and procedure is exemplified by the way dungeoneering players encounter traps. While later editions of the game would introduce numerical tests for overcoming traps (a player can roll a six-sided die to spot and disarm a trap, for example), earlier playstyles emphasised a description of the materiality of the dungeon space when traps were encountered in the megadungeon (Maliszewski 2009; Alexander

Significantly, these rules also suggest that all groups exploring a dungeon should assign one player the role of ‘mapper’, who will be tasked with producing a map of the terrain for the players themselves. This can be done on graph paper, emulating the original map produced by the DM themselves. This mapping is done to help players to visualise the space and to record the elements of the dungeon they have already explored but serves a vital role in the spatiality of the dungeon. Mapping the megadungeon reinforces the verisimilitude of the fictional world and provides a material record of the space which is otherwise only encountered through the dialogue and description from the DM.

These maps serve as a resource for the players to assist in their dungeoneering, but they may also contain errors (which the DM should not correct). The complex spatiality of the megadungeon as a non-linear and multilevel space characterised by loops, secret areas, verticality, and nested zones introduces further challenges the production of a dungeon map as straightforward process and increases the chance of errors. Given the apparently infinite detail in which the megadungeon can be described, player created maps will never be perfect Borgesian 1:1 map of the deliberately deceptive territory but will reflect the particular priorities and contingencies of each group of players. Despite these challenges, creating a map allows the players to take greater advantage of the spatiality of the megadungeon itself in their journey, and to exploit the space itself as a resource. Players may identify potential locations of secret rooms, or tunnel through a wall to bypass a hostile monster. The megadungeon is a territory which actively resists mapping, but the production of a map assists greatly in its traversal.

Viewed from this perspective we can see the entire practice of the dungeon as a process of translating space through encounters. The process rests on two maps: one prepared by the DM (or generated on the fly through algorithmic processes), and one created by the PC. The actual ‘play’ of the megadungeon is a conversation between DM and PC which slowly translates one map into the other, from the DM’s representation of space to the PC’s spatial practice.<sup>9</sup> It is also highly significant that this conversation is typically a transitory performance which is not recorded, while the map produced by players

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2020). Players were encouraged to describe exactly how their characters were checking for traps in the fictional world of the dungeon (a common technique being to carry a ten-foot pole outstretched in front of them and tap on walls and floors) and how these would be disabled (e.g. through wedging hinges open or cutting wires). This emphasis on a thick description of the dungeon and its spatial practice contrasts to the more gamified abstraction of dungeons in *rougelike* RPGs.

<sup>9</sup> For this reason, when I act as DM in games the players take the in-fiction role of mapmakers engaged in a cartography of the dungeon.

represents a material trace of their encounter with this space. It provides continuity between serial play sessions and represents the singularity of this player's encounter with a space (as other players of the same dungeon may have chosen different paths, faced different randomised elements, or modified the space in different ways). The player-produced map is the trace of the spatial practice of the megadungeon as it is played and experienced - a record of the production of space as the "simultaneity of stories-so-far" (Massey 2005, 9).

The spatiality of the megadungeon that emerges from play has resonances with other currents of thought in human geography. Rather than the open and omnidirectional space of the surface world, the megadungeon is an extremely structured space of hierarchy, containment, and division (Elden 2009), mirroring the distinction between smooth and striated space posited by Deleuze and Guattari (1988). However, the introduction of 'Jaquayed' elements in the dungeon transform this striation into a resource which the players themselves can use to navigate - they can 'hack' the space, acting as urban explorers of the dungeon's underworld (Garrett 2013). The megadungeon is a space which is navigable and partially legible, but which resists mapping. While two-dimensional maps of space-as-surface have been associated with assuming a territory to be conquered and known (Massey 2005), the complex and potentially infinite vertical spaces of a megadungeon always exceeds the ability of players spatial practice to produce a reliable map. The exploration of the dungeon could be reimagined as a cartographic subversion of the DM's designed space in a manner similar to the improvised remapping of the landscape proposed by the situationist *dérive* (Pinder 1996) or practices of counter mapping which seek to recapture the radical potential of mapping as a counterhegemonic practice (Counter Cartographies Collective, Dalton, and Mason-Deese 2012). To follow through on the metaphor of the dungeon visit as a field trip, the spatial practice of producing maps suggests the dungeon adventurer as geographer, ethnographer, and counter mapper - principles which might also be taken forwards to attempts to map and subvert the spatial metaphors of digital media.

## 4 Gygaxian Naturalism

The preceding sections have explored the spatiality of the megadungeon from the perspective of the two participants in the asymmetric dialogue through which a fantasy role-playing game is played: the megadungeon as a representation of space conceived by the DM, and the megadungeon as a spatial practice played by PCs. This section moves on to look at how the megadungeon is imagined as a space beyond both of these participants, as a place with its own laws, complex systems and lives which are posited as autonomous from author and player. This entails a cultural geography of the fictional world of the megadungeon as a representational space: a 'living' fictional space beyond either the DM's design or the PC's dungeoneering.

The broader cultural politics of the fantasy genre have been the subject of much relevant scholarship. The original dungeons of fantasy role-playing games were inspired by twentieth-century fantasy and pulp fiction (principally JRR Tolkien, Robert E. Howard, Fritz Leiber and L. Sprague de Camp) which themselves drew on the spatial tropes of castles, catacombs and prisons in Gothic literature (Ewalt 2013; Witwer 2015). Such spaces conform to a centuries-old narrative association of the subterranean with horror, often associated the repressed spaces of the human psyche in post-war century literary criticism (Zajac 2010). Recent scholarship and online discourse amongst players has particularly examined the colonial dimensions of fantasy fiction in general (Young 2015). Van Dyke (2008) identifies humans in fantasy role-playing as "the normative race", equated with Anglo-Saxon medieval culture and the forces of civilising 'good' facing a wild and dangerous realm (Premont, Heine 2021). By contrast, the monstrous non-humans who are typically their adversaries are othered and portrayed as evil through tropes which draw closely on a colonial imaginary of people of colour as warlike, cruel and opposed to the civilising enterprise of whiteness (Young 2015; Homes 2019). The colonial tropes of fantasy TTRPGs are being challenged and re-examined by a more globally diverse practice of contemporary gaming (Wee, forthcoming), but remain a strong influence in much of the genre.

The underworld which the megadungeon portrays may often conform to many of these colonial tropes, offering a representation of a space which is characterised by its weirdness, alterity, and hostility to players. Gothic and fantastical fiction related to underground spaces has often imagined the subterranean otherworld as a space of encounter in which the civilised contemporary encounters a repressed and inhumane other, again typically portrayed through racist tropes which paint the inhabitants of such spaces as analogous to colonised peoples. It is significant that the typical settings or fictional justifications for megadungeons do not just rely on the classic

tropes of Gothic literature (ruined castles and catacombs), but also commonly feature superlative representations of the vast processual spaces of infrastructure created by industrial capitalism and urbanisation since this nineteenth century: sewers, prisons, mines, bunkers, archives, and indeed cities themselves. The portrayal of the megadungeon as a space of geologic exploration and extraction (with players digging deeper into the Earth's crust to seek richer rewards in the form of rare minerals) is analogous to Yusoff's (2018, 7) discussion of the coloniality of mining and "the libidinal economy of geology (as the desire for gold, mineralogy, and metallurgy)". The sci-fi megadungeon *Gradient Descent* (Gearing 2020) allows players to explore a vast abandoned space station, navigating a dense network of server spaces and automated factories. The megadungeon as the excavation of an archive or the remains of a dormant server has clear parallels with the digital media ecology explored elsewhere in this issue.<sup>10</sup> These approaches to the megadungeon dress the superstructures of urban capitalism in Gothic tropes and represent them as sites of weird fantasy horror.

The question then is what kind of life are the inhabitants of megadungeons represented as having? Yusoff (2018) notes that the geographic imagination of geologic spaces as essentially static and awaiting discovery by extractive forces also supports the representation of indigenous inhabitants of a territory as unnatural obstacles to extraction. In the megadungeon, monsters fulfil this role as inhabitants of a landscape whose presence constitutes an obstacle to the project of mapping the space and extracting treasure. Fairly early in the history of fantasy role-playing however, there was a move away from representing such monstrous inhabitants of the megadungeon as merely static obstacles to the players, and introducing elements which sort to give the dungeon a more dynamic representation of its denizens.

This was first achieved through the use of wandering monsters, meaning randomly chosen monsters that players would occasionally encounter while traversing the dungeon. This principle builds on the risk-reward mechanism of the megadungeon's infrastructure of play (as spending more time or making more noise in the dungeon is liable to attract wandering monsters) but assists in representing a more unpredictable lifeworld of the megadungeon. Wandering monsters help make the dungeon feel living because they "take the game out of the DM's hands, so even they are surprised by the things that show up" (Milton 2020b). This is a key principle which links back to the conceptualisation of the megadungeon as a processual space generated through randomised algorithms.

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<sup>10</sup> See Berti and de Seta, in the present issue of the Journal.

However, as the hobby developed, dungeon designers sought to go beyond this representation of monsters as mere challenges for players and began to consider the megadungeon as a complex ecological and social system. This principle became known on the role-playing blogosphere as Gygaxian naturalism, after the work of *Dungeons and Dragons* co-creator Gary Gygax which increasingly exhibited this philosophy by the late 1970s.

As I use it, [Gygaxian Naturalism] refers to a tendency [...] to go beyond describing monsters purely as opponents/obstacles for the player characters by giving game mechanics that serve little purpose other than to ground those monsters in the campaign world. [...] The intention behind Gygaxian Naturalism is to paint a picture of a 'real' world, which is to say, a world that exists for reasons other than purely gaming ones. The implication is that monsters have lives of their own and thus go about their business doing various things until they encounter the player characters. (Maliszewski 2008)

This is achieved partly through a more advanced and integrated system of randomised dungeon inhabitants which models ecosystems and social structures. Rules are introduced which outline which monsters are likely to appear together, what kinds of environment they are likely to occupy, their relation to other groups in the megadungeon, and the kinds of spaces of social reproduction (lair) they create. The megadungeon is then posited as a stochastic terrain which has a semblance of 'living reality' because it follows its own internal logic beyond the fiat of the DM or the intervention of the PC. Rather than appearing as otherworldly beings whose existence and motives are beyond the comprehension of human interlopers (Krombach 2010), the provocation of Gygaxian Naturalism is to imagine the dungeon as an extension of the known world, with comparable (albeit deeply strange) laws of ecology and sociology to the familiar world of the surface. In some cases this transition might also imply a return to more narratively-satisfying, 'story-driven' games as opposed to truly random procedural play (Bell 2021). However, this move could also serve to radically decentre both the PC and the DM from the megadungeon, and instead posit the megadungeon as a complex and autonomous fictional space on its own terms.

This can take place through the introduction of social/political factions into a dungeon, which is stipulated as a key characteristic of a megadungeon in much online discourse. Positing dungeon-dwelling life forms as inhabiting complex social structures (with their own internal and external rivalries) creates a dynamic and political terrain for PCs to encounter, as opposed to assuming that all inhabitants of a dungeon are allied in their hostility to outsiders. It provides the PCs

with a terrain of political, social, and economic opportunity to navigate and exploit, and this is borne out in the description of dungeon-dwelling monsters in *Dungeons and Dragons*, which gives increasing focus to the holistic lifeworlds of these creatures in subsequent editions. Rather than just indicating the presence of monsters such as goblins in a dungeon, adopting the principles of Gygaxian Naturalism would prompt us to consider how political power is wielded within goblin society, the nature of gender within goblin culture, how labour is divided, where young goblins are raised and fed, and how dissident goblins might seek to change their conditions – all principles which provide an infinitely more rich terrain for PCs to navigate. The principle of the living megadungeon also implies that the megadungeon itself would respond to the dungeoneering incursions of PCs. Areas that had previously been cleared of monsters might be recolonised by new inhabitants, players may be invited to join a group of rebellious goblins as advisors, and the slaying of a dragon might upset the ecological balance and prompt the emergence of yet-more-dangerous monsters. This principle of restocking the megadungeon also transforms it from the site of a single expedition to a complex ecological, social and political landscape which will be vastly more replayable (Alexander 2011b). The territory of the megadungeon resists mapping not only because it frustrates easy surveying, but also because it transforms and adapts in response to mapping.

This further raises the question of how the megadungeon reproduces itself, and what infrastructures sustain it. In an inversion of the scholarship of people-as-infrastructure in contemporary urbanisation (Simone 2004), the design of the megadungeon typically posits inhumane or monstrous infrastructures as sustaining life in the dungeon. This is best illustrated by the monster named the gelatinous cube, which was introduced in the earliest edition of *Dungeons and Dragons* (Gygax, Arneson 1974). These creatures are amoeba-like cubes of near complete transparency which perfectly fit the dimensions of a typical corridor and slowly trawl the depths of the megadungeon, digesting and recycling detritus which has collected. In this way, a suitably otherworldly solution was found for how the endless corridors of a megadungeon were kept clear, and a further challenge for the PCs was introduced.

This principle of the megadungeon as an apparently infinite social and ecological totality is best exemplified by the fictional realm of the Underdark, first introduced in Gygax's *Descent into the Depths of the Earth* (1981). The Underdark describes an enormous subterranean realm which spans the entirety of the planet. It is essentially a planetary megadungeon of interconnected caverns and rooms featuring subterranean oceans, civilizations, and cities populated by the weirdest and most inhumane denizens of the game. It forms a kind of satirical inversion of the surface world rendered as a megadungeon – a

space which is presented as so radically weird that it constitutes an alternative reality to the known world.

The megadungeon is significant then because it gives full space to the representation of life radically different from the apparent norms of 'civilised' (i.e. human) life. These holey spaces of subterranean infrastructure and inhuman environments constitute a heterotopia of sorts (Kindynis 2016). Rather than the brief appearances of the weird or horrific which are typical of fantasy and horror fiction, the weird and inhuman elements of the megadungeon necessarily must be given representation as fully fleshed systems or complex lifeworlds. Writing about the discourse around invasive plant species, Clark noted that "the notion of 'globalization from below' might have new connotations if it can be shown that there is no final cut-off point to this 'below', no guard-rail to keep us to the realm of the already humanized" (Clark 2002, 105). The Underdark, and the megadungeon more broadly, might be a provocation to imagine a radically different and monstrous form of globalization which lurks beneath the surface of liberal narratives of cosmopolitan progress.

Imagining the megadungeon as a representational space for other ways of life which subvert and challenge normative assumptions of surface-dwelling life aligns with the geographical discourse of volumetric spaces on the internet, and the apparently strange social structures which animate and maintain the depths of digital media.<sup>11</sup> The megadungeon proposed by Gygaxian Naturalism no longer stays put as a static space but reveals a lively and interconnected inhuman geography of a subterranean world (Cohen 2015; Yusoff 2018; Billé 2020). New and weird spaces of vertical life are apparent which contradict the normative presumption of life as horizontal and surface-dwelling (Roast 2022). As Garrett (2019) describes, contemporary urbanisation creates its own complex geology of sewer systems, bunkers, basements, mines and vaults which transform the subterranean earth into a geopolitical battleground and suggest the megadungeon as a potent metaphor for a planet-wide network of extended urbanisation.

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<sup>11</sup> See de Seta, in the present issue of the Journal.

## 5 Return to Surface and Conclusions

In this preliminary run through the geography of the megadungeon, Lefebvre's triad of spatial production has been applied to the imaginative and social phenomenon of the megadungeon as it existed in its origins in fantasy TTRPGs. Evidently, the web-based discourse of a wide community of players and designers has already developed a sophisticated 'philosophy of the dungeon', and my intention in mapping these discourses onto Lefebvrian categories is to illustrate the depth and resonances of the resulting spatial practice. The conceived space of the dungeon (both by individual DMs and algorithmic processes) is a 'representation of space' which functions as an infrastructure of play, imposing certain limits on agency and knowledge to create a hostile and indeterminate terrain. The result is complex striated space (Deleuze, Guattari 1988) which requires a distinct 'spatial practice' to perceive and navigate: players are encouraged to engage with the spatiality of the dungeon as a resource itself in novel and unexpected ways, not least through the production of their own mapping of the space. At its essence, the play of the dungeon is a spatial practice which translates the DM's representation of space into the player's spatial practice through the conversion of one map to another. Finally, advanced discourses of dungeon philosophy posit the megadungeon as a living material world with its own social and ecological cosmology, suggesting a 'representational space' occupied by weird and monstrous forms of life.

In tracing these three approaches, it is possible to identify how certain distinct spatial qualities of the dungeon came to be emphasised and exaggerated to the point where they became the notionally infinite space of the megadungeon. The platform-like standardisation of encounter through an infrastructure of play lent itself to automated generation instead of authorial design. The development of particular modes of traversing this space enhanced the possibilities of satisfying and rewarding play within hugely extended dimensions. With the principle of Gyaxian naturalism, the infinite extent of the megadungeon could be populated by strange forms of life and social-ecological systems took full advantage of the possibilities of this space.<sup>12</sup>

The megadungeon then constitutes a complex geographic object, produced through asymmetric spatial practice. TTRPGs in general produce a particular form of space which is grounded in textual and

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<sup>12</sup> There is an evident tension here between the principles of authorial (human) design of dungeon spaces, and the procedural (machinic) generation of spaces and encounters. These two countervailing tendencies are well documented by dungeon philosophers (Bell 2021) and do not neatly cleave to the dungeon/megadungeon distinction. The interface of human-algorithmic design in TTRPGs and the cybernetic geographies this gives rise to is a topic worthy of detailed exploration beyond this article.

diagrammatic representations of space (whether produced by an author or an algorithm), but which is practiced differently in the ephemeral dialogue through which players navigate the space. The spaces of TTRPGs are performed through a very distinct improvised conversational practice, which arguably has closer parallels to geographies of dance, play, and artistic practice than geographies of video games. In the context of the megadungeon, the material trace left by this practice is a map of the dungeon which documents the players incomplete traversal of the fictional landscape. It is tempting to see the dungeoneer as a metaphor for the construction of geographic knowledge more broadly, both practices engaged in a process of mapping shifting spaces with limited resources and often adverse conditions. Representations of space in the pages of a dungeon module and of the real world in geographic journals often both rely on similar practices of textual description, and 2D diagrams and stochastic models. There are broader implications here for how spatial knowledge can be conveyed in novel and original ways: could we ask geographers to represent a field site through a megadungeon, or incorporate TTRPG practices into their fieldwork? How can textual and diagrammatic representations offer new insights into the traversal of vastly extended urban spaces and archives?

This also carries implications for the application of the megadungeon as a metaphor for digital media ecologies, as postulated in the other articles of this issue. The megadungeon is a space which is impossible to map, and in this it is most obviously parallel with the digital archive. The key function of the megadungeon as an infrastructure of play which shapes certain forms of agency (and the spatial application of agency) to my mind poses a provocation for digital media: what room is there for agency or creative and novel combinations of resources to circumvent the adverse terrain of the digital megadungeon? Is the gamification of digital media based solely on the 'mechanical' model of random number generation, numerical tests, and metrics, or is their possibility for digital dungeoneers to create novel and unanticipated pathways to the next level? Drawing on the notion of Gyaxian Naturalism we might also ask what assumptions about normative forms of life and inherited prejudices are embedded in the megadungeon - the colonial and Eurocentric tropes of the fictional megadungeon and its inhabitants perhaps mirror the biases introduced in the training data of large language models. We could also ask who does the work of maintaining the megadungeon: what is the digital analogue of the gelatinous cube that crawls the depths of the deep web to keep it clean and functioning?

With this observation in mind, we might also consider applying the megadungeon as metaphor to geographic phenomenon in the non-digital realm. The image of a processual space unfolding through a highly striated network of enclosures offers a potent metaphor for

geographies of incarceration and border control, resource extraction and infrastructure – and might prompt similar questions about the space for agency and representation within these networks. The megadungeon likewise aligns with recent discourses of urban geography, where the notion of extended urbanisation posits a centreless, permanent frontier of urban life which contains novel reconstructions of daily life, ecology, and definitions of the human. The metaphorical power of the megadungeon perhaps speaks to a deeper entrenchment of notions of gamification and enclosure in the landscapes and mediascapes which seem to surround us at the start of the twenty-first century. Future delves into the geography of the megadungeon should find ample material here for further enquiry.

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# Megadungeon: A Model for Media Complexity

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**Abstract** The essay aims to propose the diagrammatic structure of the megadungeon as a metaphor to represent the complexity, interconnectedness, and multi-layered nature of the current media scenario, including its active branches such as new media art and Digital Humanities. The reference is drawn from the concept of the dungeon, which has been successfully introduced into the realm of role-playing games since the 1970s. Conventionally, a dungeon refers to a complex, multi-level maze of corridors, tunnels, rooms, and hidden chambers. The nature of dungeons is to be theoretically infinite floor plans that game designers have learned to produce algorithmically: when they cross a certain size threshold, they are known as megadungeons. In this article, I propose the megadungeon as a productive topological model that intersects different sociotechnical aspects of digital media, drawing on shared characteristics such as a layered structure, labyrinthine exploration, game-derived grammar, and an affinity with computational domain. Additionally, the essay proposes comparisons with similar representation models that challenge outdated cartographic metaphors and addresses specific connections between new media and the concepts of verticality and stratification.

**Keywords** New media art. Dungeon. In-game worldbuilding. Digital media. Geology of media.

**Summary** 1 What Expendable Space? On the Geological Production of the Dungeon. – 2 A Postmodern Dungeon. – 3 Digital Crawling. – 4 Stacked and Vertical, a Diagrammatic Application.



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## 1 What Expendable Space? On the Geological Production of the Dungeon

In an article a few years ago, Patricia Reed (2019) used as a starting point the famous song and attraction *It's a Small World*, a Disney powerhouse that debuted at the 1964 New York World's Fair. Based on an optimistic view of the spatial and cognitive reductions caused by globalization, she argued that the idea of the world becoming smaller and more manageable is an oversimplification. Instead, sixty years later, time has unfolded to reveal increasingly powerful global images, which have replaced the closeness once promised by the then-new telecommunication technologies with an immense vastness and multidimensional complexity. As Reed argues, it is now impossible to think in terms of 'small worlds': "the seemingly harmless expression obfuscates the ill-reasoned assumption that heightened interconnectivity yields proximity and closeness," leading to an unprecedented "big-world condition of coexistential *n*th dimensionality".<sup>1</sup>

The 'dimensionality' produced by the use of communication technologies has shifted the focus to the consistency of those infrastructures, real or imagined, that form the vectors of the trajectory. These infrastructures can self-generate and interconnect through what can be described as machinic intelligence (Johnston 2008), traversing various disciplines such as computer science, arts, logistics, and economics. In essence, what initially seemed central to the process - close interaction - has now been overshadowed by its growing spatiotemporal sophistication.

When Actor-Network Theory (ANT) began to emerge in the 1990s as a way of representing social theory, discussing human and non-human actors and the construction of infinite agencies through their connections, it drew attention to complexity, mobility, and continuous production (Law, Hassard 1999; Latour 2005). These connections no longer seemed to evoke a solid and compact dimension, and the mere existence of a network necessitated questioning a 'space in which to be produced' (Murdoch 1998; November, Camacho-Hübner, Latour 2010). Perceptually, these relational spaces should be vast, numerically inconceivable, and multidimensional, presenting an image far from that of a small world. The 'spatial turn' in the humanities, underway since the late 1980s (Falkheimer, Jansson 2006; Warf, Arias 2009), has championed this perspective, reworking the insights of the Marxist geographer Henri Lefebvre in *The Production of Space* ([1974] 1991), as interpreted by Edward Soja (1989; 1996,

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<sup>1</sup> The purpose of Reed's article is to propose a scale-based framework for addressing themes such as ubiquitous computing and the technological impact on the terrestrial environment.

53-82). Soja's 'postmodern geographies' announce a revision of Lefebvre's triadic dialectic (perceived, conceived, and lived spaces), including a proper 'thirdspace', a space that is at once real and imagined, offering an alternative to both subjectively perceived space and the objectively and conventionally abstract space of cartography. In the thirdspace, representation is turned upside down: it is no longer the human theoretical effort attempting to recreate the perimeters of the real, but rather cultural representations themselves creating new collective, asymmetric, symbolic spaces, "radically open to additional otherness, to a continuing expansion of spatial knowledge" (Soja 1996, 61).

This spatial turn also impacted media studies, envisioning spaces of representation as a subset of communication theories that continually contest their own limits (Falkheimer, Jansson 2006, 7), exemplified by developments such as wireless networks, mobile Internet, and smart cities. As Reed (2019) writes, navigation is a "synthetic operation", in which different spaces must be associated. For instance, navigating through cities entails a continuous symbolic interaction with the urban environment, mediated by mobile apps or digital advertisements. Similarly, engaging in location-based games or augmented reality experiences blurs the line between the 'real' city and its 'represented' counterpart (Leorke 2019).

Today, it is easy to associate imaginary dimensional spaces and active participation with gaming-related scenarios (Nicholls, Ryan 2008; Günzel 2019). Shortly after Soja's clarifications, Espen Aarseth pioneered research in this domain, applying Lefebvrian structuring to video games to achieve what his work "Allegories of Space" (2001) suggests: an in-game spatial resolution of the aesthetic-allegorical moment (Günzel 2019). However, with the proliferation of virtual open worlds, massively multiplayer online role-playing games (MMORPGs), and sandboxes, traditional rules for representing these spaces are becoming less relevant. This shift is further amplified by increasing connections to the real world through gamification, sensory applications, micropayment economies, blockchain, and secondary markets. Viewing video games as mere allegories is no longer enough (Fraser 2011). Stephan Günzel, analysing Nelson Goodman's *Languages of Art* (1968), argues that games, despite their lack of 'the flesh of reality', must become a symmetrical representation of the theory of space, thus giving them a 'thirdspace' position that can be grasped through lived experience. In this perspective it is indifferent to recognize certain spaces as 'real' or 'false', while it is essential to consider them as cultural products (Günzel 2019, 171-4). The actual question might be more probing: when digital game experiences step out into the outside world, do they encounter anything other than an additional layer influenced by playful, digitally hybrid and cross-linked areas? This seems to be the message of those game-like

spaces that organise data within a spatialised sensorium, incorporating a layering of reality. Sometimes this interplay is *a priori*, as in the arrangement of information typical of MMORPGs ironically adopted as an explanatory model by Wikipedia – arguably the most famous crowdsourced public database. Drawing inspiration from alternate reality games, the most active contributors have created a page that equates the satisfaction derived from compiling pages to completing quests in role-playing games:

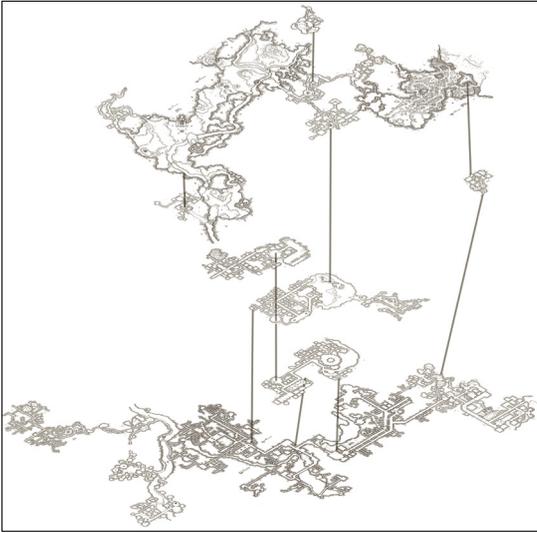
Wikipedia has an immersive gameworld with 46,459,720 players and 6,743,683 unique locations, including 69,542 undiscovered secret areas, 38,745 fully excavated dungeons, and 6,398 legendary dungeons. Magical items and powers can be found scattered over these locations, whose navigation is aided by maps of the game world.<sup>2</sup>

This analogy reimagines users as players, and articles as dungeon locations, categorizing them into undiscovered areas (orphaned articles), fully explored dungeons (good articles), and legendary dungeons (featured articles), employing a system where experience points and levelling up serve as gameplay mechanics linked to article editing. Sometimes, this crossover occurs *a posteriori*, as seen in recent RPGs integrating links to web3 payment systems tied to personal wallets, or backend APIs that interact with the outside world. An early example is the video game *Diablo II* (2000), where legendary items from endlessly generated dungeons were sold on grey market platforms like eBay, creating a direct link between in-game gold farming and its commodification in real-world markets (O'Brien 2016; Stein 2021).

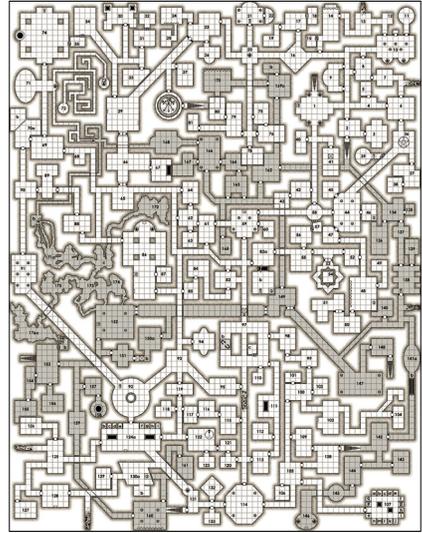
The purpose of this essay is to propose a diagrammatic representation of today's new media space, utilizing a culturally rich and playful object that can be understood through its numerous interconnected layers. This 'object' is the dungeon, a key element in the role-playing tradition: an often-subterranean maze-like topological model capable of symbolizing – through its theoretically infinite and self-generating nature – much more than a specific adventure space. Its larger counterpart, the megadungeon, effectively describes the 'total complexity' of an ever-expanding and evolving digital environment composed of creative activities, interacting media, operational passages, and layers of information (Graham 1998). The continuous stratification – a reiteration closely related to the concept of 'inner infinitude' which Hans Scheuerl associated with the unending recursion of ludic

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<sup>2</sup> The page can be accessed at "Wikipedia: *Wikipedia* is an MMORPG", [https://en.wikipedia.org/wiki/Wikipedia:Wikipedia\\_is\\_an\\_MMORPG](https://en.wikipedia.org/wiki/Wikipedia:Wikipedia_is_an_MMORPG); see also McGonigal 2011, 229-32.



**Figure 1** Dyson Logos, "MegaDelve". *Dyson's Dodecahedron*. 2015. <https://dysonlogos.blog/2015/02/28/state-of-the-mega-delve>. Courtesy of the author



**Figure 2** Tim Hartin, "Multi-Dungeon Map". *Paratime Design*. 2012-19. Courtesy of the author

structures (Scheuerl 1954; quoted in Kwastek 2015, 76) – is precisely what gives it this character of vastness, justifying the use of the prefix ‘mega’ and contrasting with more Disneyesque small worlds [figs 1-2].

The megadungeon aims to present itself as a third-spatial ecumenopolis; an imaginative representation of the infrastructure that constitutes our techno-cultural world; an “abstract geology” – to quote Robert Smithson (1968), one of the land artists who deeply understood the theoretical idea of excavation. In this, no politics of space applies, except for the infinite production of layers. The ‘where’ of the megadungeon, then, is necessarily dependent on the dimensions brought by technologies: every hertz on this planet has the potential to create new worlds, and every collaborative media project spawns new disciplines, artworks, worldbuilding, and personas. Thus, if the spatial mapping of contemporary techno-cultural production (and its associated data) is inadequate for distinguishing its elements, one might consider the concept of a diagrammatic fantasy game architecture as an arbitrary yet generative construct.

According to Johan Huizinga, it is *homo ludens* ([1938] 1949), not *homo faber*, who is primarily responsible for the recent development of human society. Huizinga mostly reflected on the pre-social nature of play, underpinning art, war, and religious rituals. However, he could not have foreseen how, in the latter half of the twentieth century, an intensified focus on games would significantly influence

education, interaction design, public services, and lead to a shift from play being perceived as a purely childish domain to encompassing a wide range of gamified experiences.<sup>3</sup> Echoing Roger Caillois' notion of "play without a game" (1961), the megadungeon of the ubiquitous computing era remains permeated by the Huizinghian play-behavior. The ubiquity of games has transformed our culture - and the spaces that give rise to it - into a deterritorialized space of engagement. A space that can only be understood by adding and connecting, rather than limiting, especially in a postmedia condition where "no single medium is dominant; instead, all the different media influence and determine each other" (Weibel 2012).

## 2 A Postmodern Dungeon

The success of the term 'dungeon' is attributed to the famous pen-and-paper role-playing game *Dungeons & Dragons* (hereinafter referred to as *D&D*), which was launched in 1974 by Gary Gygax and Dave Arneson. *D&D* differed significantly from the preceding generation of modern tactical wargames, which were based on strategic thinking influenced by chess and inspired by the nineteenth century Prussian tradition. Gygax and Arneson, hobbyists from the American Midwest area, drew from the historical wargames the concept of generating randomness through dice, the use of maps, and a focus on combat, but they matured these elements over decades of fantastical visions and readings, heavily influenced by the English medieval revival (G. MacDonald, C.S. Lewis, J.R.R. Tolkien) absorbed into American mass culture. This shift moved away from the 'science of armies' to an emphasis on solitary and Romantic heroes, transforming the game into a realm of imagination, storytelling, and player immersion (Peterson 2012; Laycock 2015). The dungeon is a crucial element of the game's functional aspect and its main adventure scenario, typically extending underground. Its interconnections, tunnels, vastness, uncertain boundaries, scalar level system, and the inexplicable presence of treasures contribute to making it a postmodern product in its abstract relationship to space (where does it extend, what architectural principles support it, how it was constructed?) and time (when was it built, what are the biographies of its inhabitants?). The dungeon is both scientifically - referring to the architectural functionality that derives from the logical-mathematical moment of miniature placement in wargames - and fantastically plausible as a literary product. Our megadungeon, unlike its regular counterpart,

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**3** For a deeper investigation of fantasy role-playing games as an object of popular culture through Huizinga's lens, see the introductory chapter of Laycock 2015.

extends beyond the boundaries of the game's 'magic circle' (Huizinga 1949; Waskul, Lust 2004) and bleeds into reality. While retaining its layered and networked structure, it merges with various disciplines, technologies, images, and data, to capture the ever-changing landscape of contemporary digital creativity. In his description of the megadungeon in the paper-based tradition of *D&D*, John Harris (2020) offers a flexible definition that can be applied to concepts of vastness and complexity beyond the game's scope:

The word 'Dungeon' in the title of the game refers to what is now termed a megadungeon. It is not just the place where the orcs terrorizing town are hiding out, or where the drow base their assaults on the surface world, or where the mind flayers sit and brood. It is where all these things happen but is much more than any of those things. It is a huge space, stretching far down into the earth, its depths unplumbed, its age and origin beyond mortal knowledge. It is an archetypal setting, a meta-place. (69)<sup>4</sup>

An infrastructure well-suited for storytelling and random generation of monsters, objects, and challenges emerged as Arneson established the original dungeon in *Blackmoor* - the first and most widely imitated setting of *D&D*, which has become its archetypal topographic model. Between 1971 and 1972, adapting the rules of two previous wargames (*Braunstein* and *Chainmail*), the initial campaigns of *Blackmoor* came to life in the dungeons of the eponymous castle. These dungeons were presented as a distinct entity detached from the surface, extending downward in a labyrinthine map of six levels, each offering an incremental level of challenge (Peterson 2012, 64-71). As the characters delve into their quest to confront the malevolent wizard, they are not merely exploring a multi-level underground architecture; they are actively engaged in crafting an entire worldbuilding experience. Utilizing a volumetric and multi-level procedural approach, this experience has the potential for infinite expansion in both time and space. Arneson himself observed an increasing preference for subterranean settings (Svenson 2007), likely attributable to the prolonged and steady assimilation of the underground notion in modern times (Williams 2008). The concept of excavation as a usable space played a significant role in emphasizing the underground's importance in the advancement of modern technology - what Lewis Mumford (1934) called 'paleotechnics'. Additionally, the development

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<sup>4</sup> The term megadungeon is a common expression in the field of role-playing games. It refers to an extremely vast dungeon that can be crafted either by human agency, as in pen-and-paper dungeon crawlers, or by machines, as seen in procedurally generated digital ones (Hancock 2000).

of subways and the emergence of bunker culture during the Cold War further highlighted the significance of subterranean spaces. It could even be argued that the basements of urban middle-class neighbourhood in the United States, where hobbyists often gathered, contributed to this association.

'Dungeon' is an architectural term derived from the French *donjon*, which referred to a fortified tower used for both defensive and residential purposes, typical of the early Middle Ages, especially in Norman culture. In contrast to its later interpretation influenced by role-playing games, the term originally denoted something characterized by verticality, standing tall on the surface, not located underground. The shift towards a downward connotation likely arose from a linguistic evolution and extended use among Anglo-Saxon speakers, where 'dungeon' came to refer to an oubliette, or an underground or lower fortified prison at the base of the tower. This definition gained prominence in the novels of the eighteenth and nineteenth centuries as a counterpart to the Enlightenment values that favoured the clarity of heights, as seen, for example, in Samuel Taylor Coleridge's 1798 poem *The Dungeon*, which portrayed prisons as sources of mental distortion. The descent into the unknown and into the depths of the Self, mirroring the regressive stairs of the psyche, ties into a broader Romantic motif that includes the high fantasy revival of myths and the idea of the solitary hero. In role-playing games, this progression leads players towards a deeper identification with their characters, in contrast to the abstract role of commanding an army in wargames. Gygax and Arneson's inspirations were infused with the postmodern practice of blending past and present influences. The dungeon appears in Tolkien's works, most notably in *The Hobbit*, with its networks of tunnels beneath the Misty Mountains, the Halls of Moria, and the "endless dungeon" - as the author describes it - of Angband, but it is also present in the 'weird tales' of Conan the Barbarian, which Arneson loved, and in other more recent media, such as horror films like *House of Dracula*, set in a multi-level recess beneath the vampire's mansion (Boggs 2018). Among the influences from the mass culture of the time, they also brought in a mathematical affinity, derived from the 'science of war' in wargames and the burgeoning computer industry of the time. Contrasting with the narrative aspect, this 'algebraic' element manifests not only in the game's necessary calculations, like dice rolls, skill checks for combat, grid-based movement, and level progression, but also in the practice of 'dungeon crawling' (the continuous exploration and delving into the dungeon) immediately establishing a natural connection with the digital realm.

### 3 Digital Crawling

Shortly after *D&D*'s debut, programmers began creating digital versions of similar role-playing games. As of the early 2020s, the game design tropes that evolved from these origins remain dominant, with countless video games featuring key elements such as leveling, skill acquisition, character customization, and environmental interaction: "*D&D* helped create video games; video games almost destroyed *D&D*; and now video games were leading people back to *D&D*" (Ewalt 2013, 183).

This highlights the megadungeon as a spatial metaphor relevant to an environment shaped by digital cultures, with the practice of crawling symbolizing the intricate expansion of the thirdspace through interaction. On the other hand, the term 'crawling' also evokes the meticulous and detailed approach required to explore and chart dungeons, spread across rooms, corridors, passages, geometries.

The success of *D&D* quickly united communities of enthusiasts who had access to sufficiently powerful and flexible computer systems in universities or research centres. These passionate individuals began developing their own amateur versions of dungeon crawling (Barton, Stacks 2019; Harris 2020; Craddock 2021). *D&D*'s two primary features, the narrative-driven theatrical aspect (the adventure) and the arithmetic-mechanical dungeon exploration (crawling, battling, levelling, and looting), evolved into distinct yet equally successful subgenres: while the first drew inspiration from literary adventures, targeting adolescents as seen in gamebooks but also in the experimentation with hypertext in the 1960s, the latter showcased the procedural, expansive essence of the dungeon, revealing its inherently algorithmic nature (Reed 2023, 27-31). These amateur video games began appearing as early as 1975 on PLATO (Programmed Logic for Automatic Teaching Operations), which was the first generalized computer-assisted instruction system, initially developed by the University of Illinois, confirming the Midwest's central role in this story. PLATO comprised remote terminals connected to a central mainframe, allowing multiple users to access a wide range of learning resources, instructional materials, and collaborative tools. Despite its educational purpose, it was also used to develop small algorithmic dungeons for *D&D* devotees to simulate dungeon crawling sessions.<sup>5</sup> The programming language, straightforward and well-suited for graphics, facilitated this process.

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<sup>5</sup> While this might appear curious today, it is essential to consider how the early versions of *D&D* heavily emphasized arithmetical mechanics, including randomization effects on items and creatures.

The first known computer role-playing game (CRPG), initially disguised as a program for the Population and Energy Group, was named *pedit5* and later renamed *The Dungeon* (Harris 2020, 363-9; Reed 2023, 63-73). Its purpose was simple: digitally streamline the experience of dungeon crawling, which involved traversing rooms and corridors, fighting the creatures that inhabit them, and improving character stats. The mechanization of the dungeon also occurred from a semiotic perspective, utilizing icons made available by the system: the hero, the monster, the treasure chest... initiating a process of visually reducing the dungeon architecture to its underlying substructures. Soon after, an updated version was programmed, known succinctly as *dnd* (also referred to as *The Game of Dungeon*). This version featured gameplay and character development enhancements, placing the player in a multi-level dungeon with seemingly unlimited replayability. As Aaron A. Reed notes, this design emphasized the game's longevity:

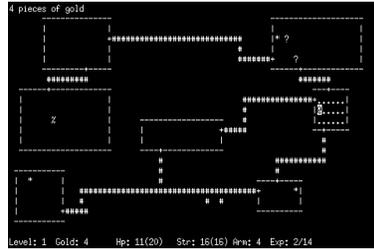
By the end of 1976, according to Dirk Pellett, Whisenwood Dungeon had claimed the virtual lives of over 100,000 characters. If this number is accurate, it's a telling testament to *dnd*'s addictiveness, since only a few thousand PLATO IV terminals existed in the world - some of which were presumably still used for teaching, on occasion. (70)

The addictive nature of the game was undoubtedly fuelled by the engaging gameplay, which kept players deeply involved, but it also had something to do with the setting of the dungeon itself. The dungeon's verticality, more than other topographies, perfectly captured the thrill of delving into a dark, libidinal world. To confirm the importance of the gameplay mechanics, as advanced as PLATO was for the mid-1970s, its graphics alone could not create the game's ambiance, so that what could be described as the underground culture of the dungeon was not experienced through visual aesthetics but through its raw mathematical procedures.

Still crafted in an amateurish manner, a later spin-off of *pedit5* was *Orthanc* (1978). This game was notable for introducing rudimentary multiplayer features and a self-generating dungeon that reconfigured itself every 180 days (70). *Moria* (1975), on the other hand, was the earliest 3D wireframe CRPG with a first-person view, a highly advanced game for its time: featuring large and dynamic maps, multiplayer capabilities, and a variety of interactions, with worldbuilding extending beyond the dungeon's limits (Barton, Stacks 2019, 42-9). Shortly after, *Beneath Apple Manor*, for Apple II (1978) [fig. 3], popularized pure procedural dungeons, focusing on the crude collection of statistics and numbers for the crawling aspect. This determination to push the 'generativeness' of the dungeon to its extreme consequences eventually led to the birth of the new subgenre called



**Figure 3** *Beneath Apple Manor*. 1978. The Software Factory. Apple II, screenshot by Chester Bolingbroke, *CRPG Addict*. <https://crpgaddict.blogspot.com/2012/12/game-79-beneath-apple-manor-1978.html>. Courtesy of the Chester Bolingbroke



**Figure 4** *Rogue*. 1980-82. BSD Unix, screenshot by TheDarkb. Creative Commons 4.0

‘roguelike’. The name derives from a subsequent game: *Rogue* (1980) [fig. 4], freely playable on multiple platforms and highly successful, but, in fact, its foundations can be traced back to *Beneath Apple Manor* (Garda 2013). According to David Craddock, who has meticulously reconstructed the history of these ‘dungeon hacks’, this was essentially a process of convergent evolution, through which different organisms, not necessarily informed by one another, developed common traits in response to the environment (Craddock 2021, 1-9). Without the latter knowing the former (Bolingbroke 2012), *Beneath Apple Manor* and *Rogue* did just that, and they did it in an identical way, presenting a paroxysmal but apparently necessary depiction of the dungeon. During the era of the graphical revolution in gaming, the success of roguelikes, characterized by their extreme focus on procedurally generated abstract maps and mechanical complexity, with no interest in aesthetic embellishment, is a unique phenomenon that deserves consideration. As mentioned earlier, the graphical construction was extremely simple: in a top-down view, rooms revealed themselves as the player moved from one to the next, with characters, monsters, and objects represented simply as small, coloured squares. This subgenre achieved incredible success, reaching its peak between the late 1980s and the early 1990s (with the most renowned titles being *NetHack* in 1987, *Angband* in 1990, inspired by Tolkien’s fortress dungeons, and *Ancient Domains of Mystery* in 1994) and still thriving to this day (Harris 2020).

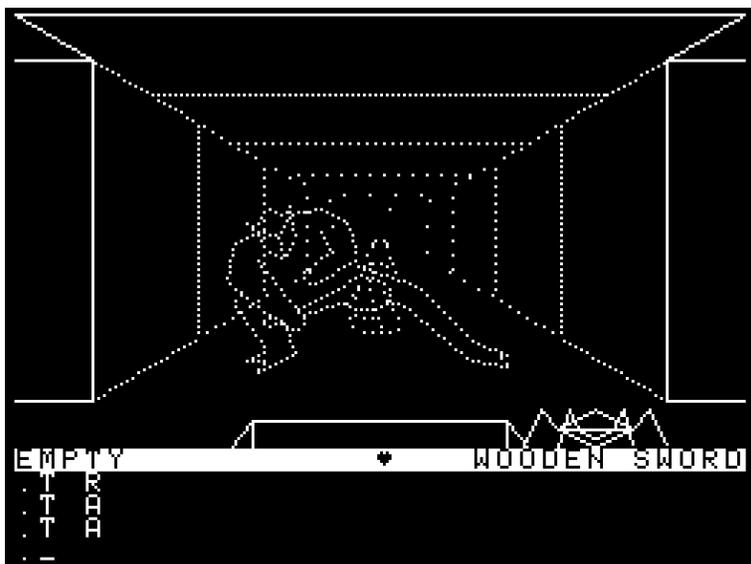
The definition of a roguelike, a topic of debate for decades, was finally formalized at the 2008 International Roguelike Development Conference. During the event, a list of nine high-value and six low-value factors was established to define the genre’s canon (Berlin Interpretation 2008); key factors include “random environment generation” and “complexity”, along with a sub-definition for dungeons as

“levels composed of rooms and corridors”. While interesting observations can be made about various strategies for proceduralization or randomization – such as cellular automata, generative grammar, genetic algorithms, and hybrid approaches (Van der Linden, Lopes, Bidarra 2014; Parker 2017; Viana, Dos Santos 2021) – the crucial point here is recognizing the dungeon as a site for specific hidden criteria of complexity, tied to the thematic symbolism of the underground. The megadungeon merges a literary symbol of an irrational and non-Euclidean subconscious with the ‘Cartesian grids’ referred to in Berlin’s roguelike interpretation, forming its precise mechanics. This combination evokes an undefined, non-linear temporal moment, blending the digital automated productivity with the pre-modern archetype of the cave – as seen in the subterranean adventures of Ludvig Holberg’s *Niels Klim’s Underground Journey* or Jules Verne’s *Journey to the Center of the Earth*, or with the living subterranean entity in Conan Doyle’s tales of Professor Challenger, which Deleuze and Guattari discuss in their “geology of morals” (Deleuze, Guattari 1987, 39-74). In the roguelike *Ancient Domains of Mystery* (1994), for example, the overworld map remains fixed, while procedural generation occurs only once the hero descends into the dungeon, embodying how the theoretical movement of the dungeon within the earth is represented by its own architecture, an inherently original symbolic space.

#### 4 Stacked and Vertical, a Diagrammatic Application

In fields like critical design theory, media studies, and contemporary art, metaphorical representations of vertical and interconnected spatiality have become increasingly prevalent since the postmodern era [fig. 5]. As society has embraced radical informatization, conceptual forms have evolved to encapsulate the ‘precision of complexity’. For instance, the multi-level architectures of megalopolises and the sharp geometries in modern cities appear to embody and rationalize a densely complex array of forms. At the same time, as Lev Manovich has observed, a notable shift has occurred in our visual culture: from the twentieth century’s focus on cinema, which unfolds through the narrative of moving images, to the database, a system characterized by its organizational capabilities:

After the novel, and subsequently cinema, privileged narrative as the key form of cultural expression in the modern age, the computer age introduced its correlate – database. Many new media objects do not tell stories; they don’t have a beginning or an end; in fact, they don’t have any development, thematically, formally or otherwise, which would organize their elements into a sequence. Instead, they are collections of individual items, where every item has the same significance as any other. (Manovich 1999, 80)



**Figure 5** *Dungeons of Daggorath*. 1982. DynaMicro. TRS-80 Color Computer, screenshot by Chester Bolingbroke, *CRPG Addict*. <https://crpgaddict.blogspot.com/2014/01/game-132-dungeons-of-daggorath-1982.html>. Courtesy of the Chester Bolingbroke

In the same way that Erwin Panofsky saw linear perspective as the symbolic form of the modern era, Manovich proposes the database as the symbolic form of the computer era, describing it as “a new way to structure our experience of ourselves and of the world” (81). This definition alone sufficiently encompasses the potential space of the ‘mega’, defining the structural framework of the experience within a world dominated by the digital. However, the parallels extend further: the focus on mechanics, as opposed to poetic narration, is also prevalent in roguelikes, which are typical digital artifacts that prioritize the structured organization of databases. Furthermore, Manovich’s reference to objects that do not tell stories and have no beginning or end echoes the idea of “non-modality” as defined in the Berlin Interpretation of roguelike games, implying that actions like movement, battle, and item collection can be consistently performed at any time and place on the map, similar to the way data is managed in databases.

From an ANT perspective, Levi R. Bryant (2012) even identifies the game construct of *D&D* as exemplary in representing complex relational networks of actors, including layers, objects, stats, weapons, and dungeon inhabitants. In these networks, everything is active, nothing is passive, production and contamination are constant. In the proposed megadungeon model, these agencies of continuous modification are replicated at each level and intersection, such as

in the corridors leading to higher or lower levels, allowing nomadic pathways to expand. Curtis Carbonell, in his writing “Tabletop Role-Playing Games, the Modern Fantastic, and Analog ‘Realized’ Worlds” (2016), examines the theoretical creation of dungeons as fantasy ‘realized worlds’, drawing inspiration from Deleuze’s concept of the virtual and models of entanglement:

Deleuze’s ‘virtual’ can handle the complexity of ‘realized’ worlds, and its use rejects the naïve idea that the fantastic only works in a text because the world is supposedly knowable in a simple fashion. Indeed, these ‘realized’ worlds multiply day by day as more and more are produced, massive assemblages of both real and imaginary parts. The material and digital objects of a ‘realized’ world form an intensely complex network that can help in understanding the connected communications systems of today as well as the place of the human subject within them. (Särkijärvi 2017)

In this context, the intrinsic complexity of the megadungeon can also be ascribed to the domain of contemporary media history: it is stratified not only spatially but also temporally (with medieval references yet originating in science fiction and thriving in the digital realm) and in terms of practices (with game design as a fundamental interface referent in the current digital scenario). As observed, the world of cables, transmissions, and data packets in which humanity now exists – and from which media art draws inspiration – is evolving into an oversized spatiality that is no longer quantifiable. The same goes for time, where contemporary categories are compelled to accept the exclusion of a clear linearity. This argument, primarily debated and developed within German media theory, is most notably encapsulated in Siegfried Zielinski’s concept of the “deep time of media” (2006), which has been incorporated by Jussi Parikka into a broader reflection on a possible media geology. In this context, the implied ‘immateriality’ of new media is rejected and linked to the subterranean materials offered by the earth as the ‘geophysics of information technology’, connecting the depths of extraction required for the construction of devices with the circles of orbiting satellites (Parikka 2015). Assuming that media are not just technical tools but also ways of organizing and understanding the world, they operate on vast temporal scales, shaping a kind of meta-archaeology composed of layers and different variations of mediation. As Koen Leurs and Philipp Seufferling write, “this perspective helps to denaturalize the present as the only possible outcome or the result of a natural progression (2022, 291), moving research away from a fixed teleological chronosequence towards “do not seek the old in the new, but find something new in the old” (Zielinski 2006, 3).

As a potential product of media ‘variantology’, the dungeon would be a meaningful apparatus that navigates historical circularity,

seeking geological space in an alternative subterranean realm. According to Zielinski, there are no fixed origins to be narrated, but rather a continuous historical stratification of internal anomalies within media history, sometimes unconventional, often existing in a time 'out of joint'. Matteo Pasquinelli, in a paper titled "Three Thousand Years of Algorithmic Rituals" (2019), presents a fascinating examination of how algorithmic culture predates modern technological forms by serving as the basis for a prehistoric reasoning related to the geometric thought abstraction. He quotes French mathematician Jean-Luc Chabert, who stated that

algorithms have been around since the beginning of time and existed well before a special word had been coined to describe them. Algorithms are simply a set of step-by-step instructions to be carried out quite mechanically to achieve some desired result (1),

not unlike how parametric procedural crawlers have interpreted and diverged from the well-historicized medieval atmosphere of *D&D*.

Following this erratic historical trajectory, the 'generative geometry' that would lead to the intricate structures of artificial neural networks, and more recently to the layer-by-layer strata of deep learning – for which Pasquinelli himself uses the archaic expression *ars combinatoria* – seems to speak the same language as the mazes of the Renaissance tradition. These medium-like mazes comprise a system of intertwined paths that often extend into multi-level undergrounds of buildings, as exemplified in *Blackmoor*. Unlike the properly defined labyrinth, the maze does not present itself as an initiatory path in the classical sense, where the ritual of its single exit becomes a symbolic moment of death and rebirth (Kern 1981), instead, it embodies a pure whimsy of intersections, variations, and complications, where no Ariadne's thread can prove useful. It is more a journey through the spaces of generative architectures, from Giovanni Battista Piranesi's dungeons to the multi-scale complexities of Constant's Situationist 'drifting architecture' in *New Babylon*. Sometimes these intricate structures are confined to subterranean dimensions, echoing ancient claims by Catullus and Claudian who located the original labyrinth of Daedalus at Knossos not on the two-dimensional plane of the earth, but in the twists and turns of the underground caves beneath Mount Ida (Matthews 1922, 23). These intricate structures evoke an absolute sense of internal mobility and, above all, potentially infinite expansion, following a logic that is both abstract and mechanical, and thus potentially digital. On the other hand, according to Parikka, "depth means time" (2015, 37). Invoking the stratigraphic and mechanistic vastness of James Hutton's *Theory of the Earth* (1778), he writes:

The deep time metaphor acts as a passage to map different times and spaces of media art history. Even the term connotes the darker underground of hidden fluxes that surface only irregularly to give a taste of the underbelly of a deep media history. They offer variation in the sense Zielinski is after in media variantology: media do not progress from simple to complex, there are no blueprints for prediction, and we need to steer clear of the ‘psychopathia medialis’ of standardization and find points of variation to promote diversity. This is not meant to signal conservation but active diversification as tactics of a living cultural heritage of technological pasts in the present-futures. (Parikka 2015, 42-3)

He argues that the great sophistication achieved by the cultural theory of media art history is not the result of a linear temporal succession, but rather rooted in a geology characterized by temporal variance. In the same line of thought, in relation to the realm of video games, even though not with a pure dungeon crawler mechanics, it is worth mentioning the pioneering *Colossal Cave Adventure* (1976), considered the first text-based adventure in history, initially developed by Will Crowther. Crowther’s background aligns closely with the themes discussed here: he was a caver based in the American Midwest, a programmer involved in ARPANET, a computer scientist at Xerox PARC - a Californian tech institution known for early collaborations between scientists and artists (Harris 1999) - and an avid *D&D* player. The game’s textual exploration of an underground cave through narrow passages, galleries, and tunnels, spanning over 3,000 lines of code, was recreated based on the actual topography of a section of the Mammoth Cave system in Kentucky, which Crowther had personally explored (Reed 2023, 75-89). Later implementations by Don Woods, introducing elements like dragons, elves, and axe-wielding dwarves, added a rich blend of high fantasy to *Adventure*, giving it a distinctive mix of temporal and thematic elements. The caves, integral to human history for over five thousand years, were thus transformed through the cultural lens of role-playing games, eventually taking on a digital form.

Returning to the Lefebvrian terms introduced at the beginning of this essay, we might say that spatial relations are not only perceived but also culturally produced in relation to thirdspaces of representation. The spatial turn has recognized movement between these symbolic spaces: the ‘small world’ has expanded because these representational sites have claimed their own navigable and architecturally meaningful configuration. Critical theory and radical design have embraced practices of abstract topology for many years, and it is no coincidence that conceptual art and maps have been immediately associated. This relationship is evident in Alfred Korzybski’s famous assertion that “the map is not the territory”, as seen in Arts

& Language's celebrated artwork *Map to Not Indicate* (1967), or in Guy Debord and Asger Jorn's dissections of the psychogeographic map of Paris in *The Naked City* (1957). The famous red arrows, which mark the drifting passages between one area and another, cut out from paper and disassembled, reveal an interest in Paris' hidden topology - concealed sections, portals, threshold crossings, and urban levels shaped under the detournement influence of Situationist principles. These elements bear a resemblance to the Open Systems Interconnection (OSI) model that maps network infrastructures, the layers of neural networks, educational MUDs, and even the more general video game walkthroughs or other database-related visual culture.

An important model in this field, among the most cited of the last decade, is the Stack, as defined by media theorist Benjamin H. Bratton (2015), "an accidental megastructure [...] that is both a computational apparatus and a new governing architecture".

The Stack is a topological model of computation on a global scale, schematically represented as a vertical diagram consisting of different layers that combine to form a complex system. Each stratum serves a specific function in the geography of the digital world and in the interdependence of technological platforms. The overlapping six layers are sequenced: Earth, Cloud, City, Address, Interface, User, the first of which denotes the solid evidence of material resources and energy developed in terrestrial spaces, and the last of which identifies the internal population inhabiting the multi-layered circuits of the Stack. The term 'megastructure' attributed to the Stack stems from an ICT evolution of Mumford's 'megamachines', focusing on infrastructure sovereignty (such as devices, data centers, suboceanic cables, and human-side agencies) and its interplay with geopolitical jurisdictions. Essentially, it represents a structure that symbolizes the entire Earth. What is particularly interesting is the abstraction of its form: Bratton opts for a multi-layered diagram to metaphorize the 'mega' - implying wholeness yet remaining conceptually expandable - of the planetary computational scenario. Thus, the mazelike complexity among the agencies that populate it seems to be effectively described as parts of a simple geometric figure:

Today, as the *nomos* that was defined by the horizontal loop geometry of the modern state system creaks and groans, and as 'Seeing like a State' takes leave of that initial territorial nest - both with and against the demands of planetary-scale computation - we wrestle with the irregular abstractions of information, time, and territory, and the chaotic de-lamination of (practical) sovereignty from the occupation of place. For this, a *nomos* of the Cloud would, for example, draw jurisdiction not only according to the horizontal subdivision of physical sites by and for states, but also according to the vertical stacking of interdependent layers on top

of one another: two geometries sometimes in cahoots, sometimes completely diagonal and unrecognizable to one another. (Bratton 2014, 1)

In the author's clarifying lines, the Stack model is revealed as a response to the challenge of depicting the blackboxing of the media framework. The precise dimensionality of the Stack, well divided into overlapping layers that evoke the optimization of design in digital processes, is, of course, only apparent. In fact, the continuous interconnection and reproduction of its intertwining elements are utterly labyrinthine, to the point of 'eating up space'. Returning to the references posed at the beginning of this essay, we might rhetorically ask, 'where' do these layers of cold and hot storages, data, and informational abstractions extend? To answer this question, we must move beyond mere numerical reduction and explore a topology of computation that definitively transcends the confines of a small world model. Similarly, procedural digital dungeons structure themselves with rigid geometric directives - like a "striated space" to use Deleuze and Guattari's vocabulary -, only to open up to a typically post-structuralist space, 'smooth', nomadic, and self-generating, non-metric, and thus no longer computable. Yet in *A Thousand Plateaus* - a title that already hints at an abstract system of non-hierarchical stratification - and specifically in the fourteenth plateau (Deleuze, Guattari 1987, 39-74), it is observed that the two spaces (smooth and striated) are not separate segments but rather categories intersected by an exploratory movement that establishes a constant dynamic tension between them. In a geopolitical system that appears to be represented in a strictly striated manner, such as the Stack, the lines of flight that create smooth spaces of resistance are essential components of its core. In the realm of role-playing games, the procedural mechanics of digital dungeons rely on similar creative praxis, marked by the hybridization of cultural references. Luciana Parisi (2013), discussing the convergence of these two spaces, has proposed the concept of architecture produced by algorithms as 'contagious'. Over the past thirty years, computation has emerged as a powerful generator of new architectural forms and, consequently, new forms of thought organization.<sup>6</sup>

The new centrality of generative algorithms (but also cellular automata, L-systems, and parametricism) in digital design has led to

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<sup>6</sup> Historically, one of the first instances in which the scientific community acknowledged creativity in connection with algorithms occurred in the field of architecture. This recognition was marked by the awarding of the Architectural Association Prize in 1969 to John Frazer for his pioneering work in computer-generated environments (Audry 2021).

the construction of various topological geometries and curvilinear shapes that have come to be known as blob architectures. While the gridlike architecture of striated space (or digital mapping) places discrete unities at the center of a design made of points connected by lines, the topological curves of smooth space (or blob architecture) starts from the generative power of a point, the meshing and folding of which becomes the condition for the emergence of a new form. [...] Contagion describes the immanence of randomness in programming. This irreversible invasion of incompressible data into the digital design of space has led to the production of digital spatiotemporalities that do not represent physical space, but are instead new spatiotemporal actualities. (XI)

According to Parisi, the solution lies in combining the smooth and striated space categories with Alfred North Whitehead's mereotopology, the science of relations between part and whole, which the author defines "a schema that is a concrete abstraction" (XI-XII). This would explain the continuous transformation and movement within the digital grid space, where an "infiltration of randomness" (in our case, the dice that triggers randomness in wargames or the random procedural elements) occurs within "finite sets of rules" (the multi-layered structure or the game rules according to Huizinga) (XI).

To explain this quantitative indeterminacy, Parisi does not consider the gaming culture but rather delves into the domain of ontology. Still, it is evident how the practices of metamodeling can be applicable elsewhere. If we metaphorically conceive the megadungeon with its infinite layers, depths, interdisciplinary connections, and theoretical objects that constitute and relate to each other, it might be fruitful to think of mereotopology as the space where "wholes (continuities) become parts (discontinuities), and how parts can be bigger than wholes" (XII).

By geometrically considering the "big-world condition of coexistential *n*th dimensionality" (Reed 2019) mentioned at the beginning of this essay, might provide valuable insights.

The planetary-scale computing architecture of the Stack is defined by its author as a "new *nomos* rendered now as vertically thickened political geography" (Bratton 2014, 1-2).

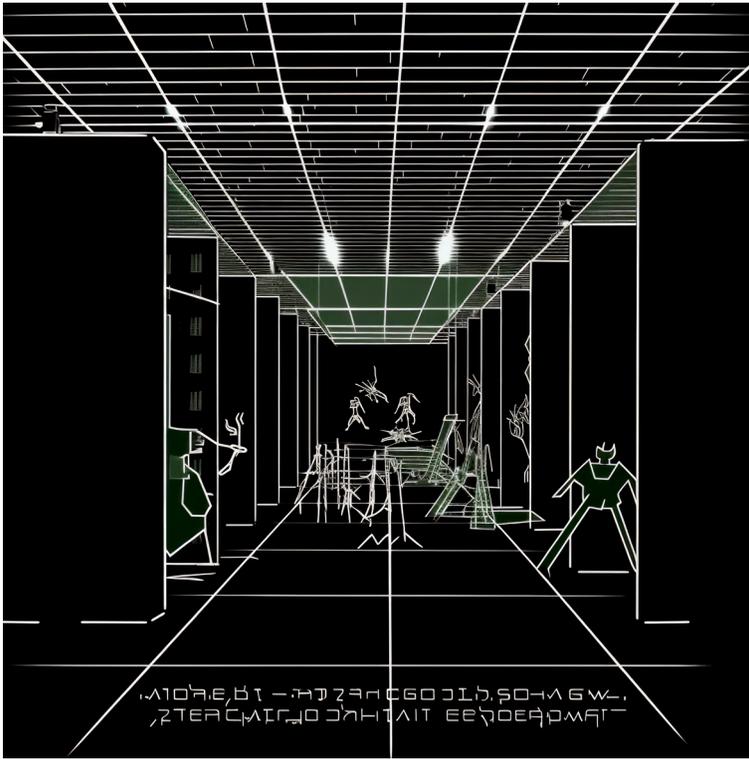


Figure 6 Jon Rafman, *Data Center*. 2023. Courtesy of the artist and Sprüth Magers

The explanation provided is intriguing. On one hand, there's a geopolitical representation of sovereign spaces in the Schmittian sense, where the world would be divided. On the other hand - and more pertinent to defining the megadungeon model - is the metaphorization of the stack diagram for the classic multi-layered structuring of software protocols "in which network technologies operate within a modular and interdependent vertical order" (Bratton 2015, XVIII).

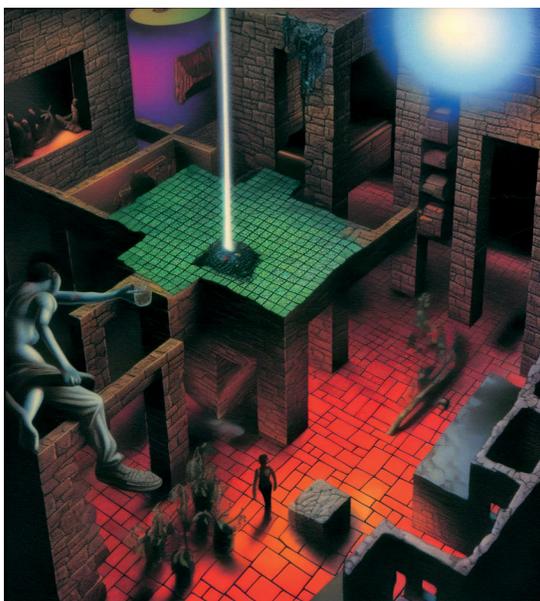
The Stack is thus a model that presents itself as global but thrives on mereotopological passages from one layer to another. For instance, from the User layer (agents not necessarily human, such as machines and minerals), it is possible to transition to the Earth layer (representing the terrestrial body, including subterranean operations) through dynamic connections. Another example could involve locative-based practices transitioning from the Interface layer to the City layer (Leorke, Wood 2019). Characteristics reminiscent of the non-modal approach of the *Berlin interpretation* in rogue-like games, where "movement, battle and other actions take place

in the same mode. Every action should be available at any point of the game” (2008).

In both the Stack and the megadungeon, the initial assumption revolves around verticality, which, as seen in the previous paragraphs, does not necessarily imply order or hierarchy (or purely mechanistic sedimentation, as Descartes imagines the formation of the Earth in the *Principia Philosophiae*). Instead, it signifies nomadic movement, passages, and exploration. As Matthew Fuller argues in *Media Ecologies* (2005) – a book that takes on the not-so-easy task of clarifying what media ecology is –, in this field topological analysis and function often coincide, opening up a multiplicity of connections (and thus ‘sub-ecologies’) that can only be represented through an aesthetics of stratification. From the preface:

Nonlinear, selforganizational, and transpositional systems behavior combine autopoietically at the intersection of media collisions. Complementing Manuel De Landa’s reading of the phase space model and Gilles Deleuze and Félix Guattari’s poetics of the machinic phylum, Fuller directs our attention toward aesthetics of layering composed of multiple relations of media dimensionality. (X)

Indeed, the concept of verticality is not solely linked to the logical diagrams of computing but also extends to metaphorical aspects concerning art, architecture, and creativity [figs 6-7]. While verticality in the contemporary context appears to distance itself from hierarchies, and the Deleuze-Guattari plateaus mark a crucial shift in this regard, there still exists a fundamental challenge in the relationship between humanity and its habitat. The underground is the oldest refuge, but virtually, the opposite scale towards the sky still represents an idea of levels, as the original etymology of dungeon, from the French *donjon*, reminds us: a fortified tower that rises above the surface and not below. In his web piece “Verticality, Part II: The Seeds of Verticality”, Christopher James Botham notes that while humans are natural surface-dwellers and naturally inclined to reach for the sky, from climbing trees to constructing architectural floors, the first idea of a surface originates underground, the dark place of birth and the return of mortal remains. This results in a desire for verticality, structured by a progression of levels (“they are below the surface, but they still have a surface of their own, so in a way the underground is still under us even when we’re inside a cave”), which also applies to contemporary architecture (Botham 2023). In addition to the expected historical references to skyscrapers, the most interesting recent example Botham proposes is the Dutch Pavilion from the 2000 World Expo in Hanover, which, just like Bratton’s Stack, is divided into six distinct layers that correspond to various types of high-tech spaces. The lowest level represented an underground-like rocky cave, while



**Figure 7**  
Jon Rafman,  
*Dungeon Crawl*, 2023.  
Courtesy of the artist  
and Sprüth Magers

the highest level featured wind turbines, evoking a direct technical connection to the sky. In a closer context to new media art and its theory, a recent example of representation explicitly inspired by the ‘software sovereignty’ of the Stack is the publication *Vertical Atlas*,

with the mission to create an atlas to help navigate the worldwide digital transformation and its complex effects at different locations and on a variety of scales (Dellanoce et al. 2022, 11),

making those paths of collective exploration explicit, and contributing to a diagrammatic visualization of new digital world. In this case too, the curators ask similar questions, recognizing the inadequacy of traditional geographies to navigate the mazes that connect tangible elements like rare stone mines or server farms to performative aspects like immersion, interface management, and recent trends in visual art:

How to map the digital realities? [...] How then to navigate the non-universal, fractal scape of altered realities with non-local borderlands? (12-13)

What seems to be happening in visual culture is not unlike what mentioned about early experiments with roguelike games, where the

convergence into similar forms was not encouraged by agreements or manifestos but rather by the simple sociotechnical scenario. In that case, it was the spontaneous encounter between *D&D* enthusiasts and digital culture; now, that same digital culture is turning its gaze to the interdisciplinary nexus between art-science and a new vision of the Earth. Current new media artists such as Trevor Paglen, Jamie Allen, Marko Peljhan, Joshua Portway, Lise Autogena, and others share common languages with various disciplines as they explore alternative geologies in their own unique ways. The same can be said for a renewed interest in the ‘world below’, where the roots of anti-anthropocentric cohabitations are increasingly being retraced. Dungeons of treasures and bacteria, as demonstrated by recent exhibitions such as *Hollow Earth: Art, Caves & The Subterranean Imaginary* (2022) at Nottingham Contemporary, or *Subterranean* at Amos Rex in Helsinki - which also dedicates a section to “Fictional Depth” -, or the prototypical *The Deep of the Modern* (2012) at Manifesta 9, which addressed the theme of multi-layered intrusion into the underground through coal mining, extraction, and megamachines.

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# Digital Depth: A Volumetric Speculation

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**Abstract** Counter commonplace associations with superficial mediation and networked flatness, the digital seems to have its own peculiar depths, which range from the infrastructural (deep sea cables, deep packet inspection, crawl depth) to the metaphorical (Deep Web, deep learning, deepfakes). This article reviews recent discussions of digital depth and argues that this concept is central to understanding multiple aspects of digital media ranging from folk theorizations to technical expertise. What is digital depth? What is deep about digital media? How does this depth interface with volumes and scales beyond the digital? Through this effort, depth emerges as an underlying feature of deeply mediatized societies.

**Keywords** Depth. Digital media. Dungeons. Imaginary. Machine learning. Metaphors. Topology. Volumetry.

**Summary** 1 -35,756 Feet: Depth as Metaphor and Imaginary. – 2 7th Layer: Cyberspace Deep. – 3 96% Submerged: The Deep, Dark Web. – 4 JustAdd One More Layer: The Depths of Machine Learning. – 5 Volumetrically Digital.



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## 1 -35,756 Feet: Depth as Metaphor and Imaginary

Depth, it could be argued, is a peculiarly modernist refuge. Coming a long way from its ontological opposition to the surface of earthly existence – the depths of *avernus*, Dante’s infernal gyres, the Chinese subterranean courts of hell –, terrestrial depth (along with its oceanic and outer space correlates) has risen (or has been tethered) back to the ground level of human experience and given a rich variety of metaphoric and epistemological roles across discourses. Cognizant of the risk of generalizing, one could tie the return of depth to metrological efforts characterizing both the scientific revolution and modern positivism, which oriented the production of knowledge towards the charting of dimensions and distances of the empirical world. From a critical theory perspective, a fascination with depth could be identified as a response to the rise of popular culture as industry and economy of distinction, in the context of which a deep engagement with cultural products determines the social standing of modern subjects. This epistemological connotation of depth translates the invention of perspective into domains beyond the reach of human lines of sight; the optical depth of field, in a sense, extends the reach of scientific discovery into the oceanic abyss and the planetary crust, and outward into space, from local cluster to cosmic radiation background. In epistemological terms, this depth is diametrically opposed to Plato’s ‘cave deep underground’ where knowledge is forcibly mediated by a superficial play of shadows. Regardless of the direction of its vector, vertical depth becomes mapped onto the linear logics of progress and innovation, with expeditions inching towards the farthest reaches of reality exemplifying the cumulative, asymptotic, anthropocentric and gendered quest for knowledge. While these examples might be Anglocentric peculiarities (which would not lessen their significance, but tie them to colonial legacies and sociolinguistic subjectivities), take the adjective ‘deep’ and some of its most commonly paired nouns: deep sea and deep space, obviously; the deep structure of linguistics and the deep unconscious of cognitive psychology; deep time, more recently, situating the human in a much longer planetary history; deep listening, expanding human perception beyond its everyday boundaries; deep politics and the deep state, probing hidden governmental processes and networks of power. In all these cases, the *deep* characterizes something beyond the fully known that can be probed and surveyed, an extension of common, everyday, superficial domains of experience into more exceptional, extreme, explorable unknowns.

Cultural analysts have recognized this return of depth (Williams 2008) and correlated it to the postmodern celebration of the surface, the “new depthlessness” that Frederic Jameson (1990, 56) identified as a constitutive feature of postmodernity. If postmodern depthlessness emphasized the superficiality of simulacra and the withdrawal

of semiotic referents, depth seems to have reemerged in contemporary art and theory as an active practice of ‘depthing’, the making or performing of depth, or as a ‘depthiness’ that combines “the epistemological reality of depthlessness with the performative possibility of depth” (Vermeulen 2015).

In the 2021 edited volume *Deep Mediations*, dedicated to charting “the meanings, paths, and valuations of depth that have historically accompanied the concept in order to understand its significance today” (Redrobe, Scheible 2021, XI), several authors approach this new depthiness from different aspects of cinematic and digital culture, probing depth “as a visual concept, as a medial concept, and as a philosophical concept” (XVII).

Departing from Thomas Friedman’s 2019 declaration of *deep* as his choice for word of the year (“Everything is going deep,” XI), the collection’s editors propose to embrace Kathryn Yusoff’s “stratigraphic imagination” as a way to tease apart this return to depth while also recognizing its historical complexity (XIII) without definitive judgements about its positive or negative value (XVI). The ‘volumetric turn’ articulated by human geographers and anthropologists grapples with a similar recognition of the relevance of depth from a parallel conceptual rubric: that of *volume*. Embracing Jeremy Crampton’s definition of the volumetric (2011), human geographer Stuart Elden (2013) revisits Virilio’s conception of a World War II battlespace characterized by “distance, depth, three-dimensionality,” as well as Sloterdijk’s spherological thought, to argue for an understanding of territory beyond the flatness of surface and the measure of area. Elden’s key question builds upon Eyal Weizman’s account of the politics of verticality, correlating questions of volumetry to the securitization of both aerial spaces and tunneled undergrounds: “how does thinking about volume - height as depth instead of surface, three dimensions instead of areas - change how we think about the politics of space?” (1), he asks. Two special collections edited by Franck Billé gather anthropological responses to the volumetric turn, charting the development of this interdisciplinary effort. Far from being merely phenomenological investigations of the depths and heights of volume, these essays exemplify a shared concern for how volumetry complicates the topology of sovereignty without weakening the control and colonization of territory (Billé 2017). Intersecting with materialist and more-than-human perspectives on the anthropocene, these efforts in volumetric scholarship chart the dynamic and heterogeneous topologies of warrens, fissures, seepages, gyres, sinkholes, reservoirs and vortexes, seeking to find ways of representing volume beyond cartographic practices. Billé (2019) argues:

It is perhaps here, at the juncture between political theory and the more-than-human, that a volumetric imaginary is especially critical.

This essay departs precisely from this juncture, delving towards volumes yet uncharted.

One aspect of contemporary social worlds that has received less attention from volumetric scholarship – perhaps as a consequence of its common correlation with superficial mediation and networked flatness – is the digital. Broadly intended in theoretical terms as the representation of information in strings of discrete symbols, the digital is at the center of most developments in media and communication systems of the last century.<sup>1</sup> The most pragmatic recognition of the volumetric relevance of the digital – which Virilio would find vindicating – is perhaps to be found in the U.S. army's addition of 'cyber' as a domain of military activity beyond the existing arenas of land, air, sea and space. The digital further complicates volumetry and its intersections with representation, sovereignty and governance: the imaginary of flat communication networks is unsettled by the unruly magma roiling right outside of their two-dimensional conduits (Venturini 2009); the orderly layering of computational infrastructures is upended by topological transformations (Cavia, Reed 2023); and the high-dimensional data spaces that machine learning models are trained on challenge human cognition at unprecedented scales (Belisle 2021). More mundanely, one can expand the linguistic exercise proposed above to the digital realm: deep sea cables sustaining most of global data flows; deep packet inspections managing this traffic; the crawl depth of search engines and the enticing lure of the Deep Web; deep learning and its products like Deep Blue, DeepDream and deepfakes. The digital, in short, seems to have its own peculiar depths. This article reviews recent discussions of digital depth and argues that this concept is central to understanding multiple aspects of digital media ranging from folk theorizations to technical expertise. What is digital depth? What is deep about digital media? How does this depth interface with volumes and scales beyond the digital? In search of answers, I offer a volumetric speculation on digital depth, articulated as a non-linear movement between physical profundities and conceptual strata, that seeks to model different aspects of the digital as they are related to verticality, layeredness, and three-dimensionality – a *deep dive*, if you will. Through this effort, depth emerges as a metaphor and, perhaps, even as a consistent imaginary (Taylor 2004) of the digital, working alongside other conceptualizations through overlaps and complementarities, and expanding the implications of this volumetry for increasingly mediatized societies.

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**1** Ontological discussions of the digital, which is one of the most widely dissected terms in media studies and adjacent disciplines, are beyond the scope of this essay; readers can find useful pointers to the topic in recent debates around computation (Galloway, Geoghegan 2021).

## 2 7th Layer: Cyberspace Deep

Since the early years of digital computation, the flattening of screens and two-dimensional interfaces has been accompanied by the yearning for the new depths of virtuality. Perhaps not surprisingly, the earliest probes into digital depth are to be found in playful and social interactions with personal computers – first in games and narratives, then in chatrooms and virtual worlds. At a time when the capabilities of computers were mainly limited to the textual realm, creative programmers developed forms of interactive fiction that took advantage of the affordances of random number generators, coding languages, parsers, and hyperlinks to push text beyond linearity (Reed 2023, 2). It is not a coincidence that many of these creations developed along the branching structures of decision trees and the winding corridors of imaginary dungeons – as Aaron A. Reed notes, the 1970s were a pivotal decade for digital narratives to develop around shared cultural referents like *Star Trek* and *Dungeons & Dragons*:

The release of *Dungeons & Dragons* in 1974 spawned at least three digital game genres as early hackers tried various ways of digitizing the immersive tabletop game with its numerical systems for simulating fantasy adventures: roguelikes and computer roleplaying games, which trended more toward graphics and action, and prose-based text adventures focused on puzzle and immersion. (28)

Even before the internet, text-based games like *Caves1*, *Castle*, *The Dungeon*, *DND*, *Dungeon*, *DUNGEON*, *Moria*, and *Oubliette* prefigure the subterranean lure of the digital, inviting players to explore sprawling cavern systems and connected chambers in explicitly spatial germs (Giddings 2016). As *Adventure*, released in 1976 by Will Crowther and Don Woods, informs the player: “You are in a maze of twisty little passages, all different” (87).

Abstracted from the dungeon archetype, branching structures of rooms connected by corridors became the standard for games and narratives situated in other settings. As the internet reached increasing numbers of users, Multi-User Dungeons (MUDs) like *Scepter* (also known as *Scepter of Goth* and *Milieu*), released by Alan E. Klietz in 1978, transformed the single-player experience of dungeon crawling, with its puzzles and monster fights, into a social space of freedom, a dynamic world to be explored with others through real-time communication (Reed 2023, 138). From experimental spaces inspired by shared cultural references, MUDs developed a culture of their own:

A dialect called mudspeke appeared, where *t* meant treasure, *snif* meant sadness, and countless in-jokes were enshrined in shorthand and slang. (141)

In 1979, an important change pulled MUDs away from fantasy gaming and towards more open-ended, collaborative endeavors. James Aspnes, a graduate student at Carnegie Mellon University, developed a MOO – an ‘object-oriented’ MUD, in which rather than fighting dragons and collecting magical items, users were encouraged to build their virtual worlds through object-oriented programming (hence the acronym). This shift was pivotal in bringing users to the digital surface: exiting their underground dungeons, players could build their own dwellings in the new frontier spaces of the internet. With the advent of MOOs, as Amy Bruckman puts it, new architectural forms become relevant: “if virtual communities are buildings, then right now we are living in the equivalent of thatched huts” (Bruckman 1996).

These new frontiers of the digital started to be discussed using a term popularized by William Gibson’s sci-fi novel *Neuromancer*: cyberspace. Howard Rheingold, who describes the WELL (Whole Earth ‘Lectronic Link) virtual community in terms of a homestead, highlights the fluid, under-construction nature of these spatial imaginaries: “No single metaphor completely conveys the nature of cyberspace” (2000, 50).

In the mid-1990s, cyberspace metaphors were clearly shaped by U.S. frontier imaginaries close to libertarianism (Paasonen 2009, 15). “Cyberspace does not lie within your borders,” John Perry Barlow’s famed manifesto (1996) reads:

Do not think that you can build it, as though it were a public construction project. You cannot. It is an act of nature, and it grows itself through our collective actions.

Far from being the “placeless place” proposed by Manuel Castells (1999, 294) or the non-place theorized by Marc Augé (1995), cyberspace developed across sites and addresses, rooms and homepages, a “language of entry and travel that positions the user *within* the medium” (Nunes 2006, xiv).

While the dungeon metaphor is gradually abandoned, its key traits of immersion, exploration, random generation, depth and branching structure remain central for a more pervasive and malleable imaginary of cyberspace.

To be sure, this imaginary also preserved colonial and extractive dynamics; Wendy Chun tracks how the fantasy of cyberspace as an “endless freedom frontier” has been overlaid onto the actually existing internet:

like all explorations, charting cyberspace entailed uncovering what was already there and declaring it new [...]. Those interested in ‘wiring the world’ reproduced – and still reproduce – narratives of ‘darkest Africa’ and civilizing missions. (Chun 2006, 51)

Romantic visions of expeditions into the ‘virgin territory’ of cyberspace are reflected by the names of early browsers like Microsoft Internet Explorer and Netscape Navigator (Morozov 2012). Eventually, as legal scholars argued, these new social spaces would develop not only architectural structures for dwelling but also laws and regulatory frameworks grounded in territorial sovereignty, bringing an end to the libertarian neofeudalism of coding wizards (Gaitenby 1996):

Much as in the tradition of territorial definition during the Age of Discovery, Wizards and users came from established sociopolitical traditions. The explorers of cyberspace, like their predecessors in mercantile and imperial Europe are formed and informed by those traditions, and act to shape what they find accordingly. The earlier explorers claimed and named, delineated and surveyed; they were terrified by the unknown, the incalculability, the sheer dimension of what they encountered. (141)

In the span of a decade, the uncharted vertical depths of generative caves were reconfigured onto the horizontal plane of the civilizing frontier; cyberspace transformed into a code/space that is increasingly entangled with everyday life (Kitchin, Dodge 2011); communities and laws tethered the online to offline social spaces. In the words of Lawrence Lessig (1996), the logic of the zone progressively subsumed that of the dungeon:

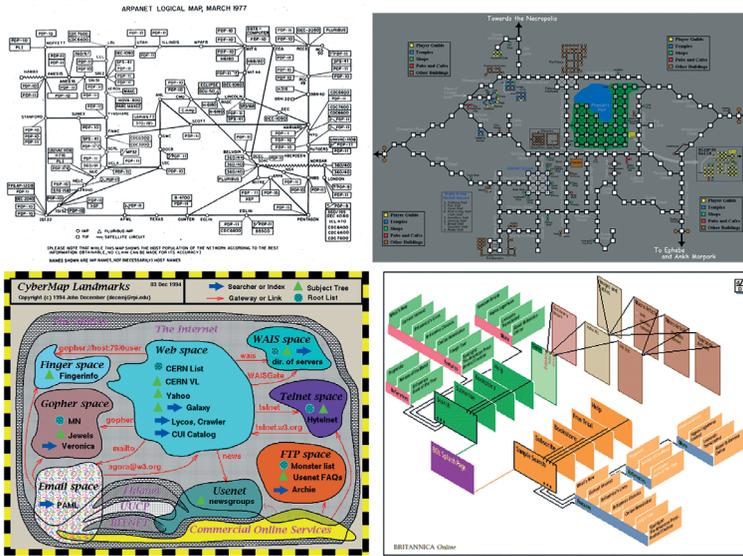
Zoning will replace the present wilderness of cyberspace, and this zoning will be archived through code - a tool [...] more perfect than any equivalent tool of zoning in real space. (1409)

The complex processes of zoning happening in parallel with network-building, protocol standardization and software development resulted in an explosion of efforts to map these new spaces. The *Atlas of Cyberspace* compiled by Martin Dodge and Rob Kitchin (2001), collecting more than a decade of examples across disciplines and communities, is perhaps the most comprehensive account of these efforts. The *Atlas* includes more standard geographical representations of traffic, cables and routing stations, but also more abstract and experimental visualizations ranging from historical maps of computer networks like ARPANET, website maps of hyperlink structures, 3D environments mapping information spaces, and topological maps of mailing lists [fig. 1]. It is striking how many of these maps and visualizations - particularly the ones that move away from geography and physical infrastructures - resonate with the structures of text-based dungeon games and MUDs: rooms and spaces connected by links and pathways, branching tree structures, and layered levels. The way in which network expansion and interoperability requires

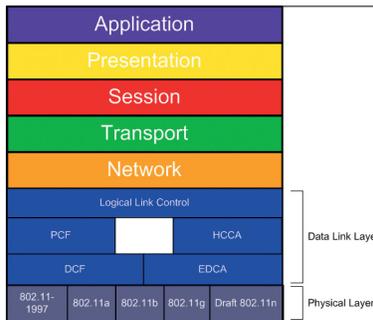
complex and overlapping layers is perhaps most iconically enshrined in the OSI model, a framework for networking systems developed since the 1970s as a way out from the ‘protocol wars’, which was published as a ISO standard in 1984 (ISO/IEC 7498), offering a conceptual map for network architecture as a stack of seven abstraction layers: Physical, Data Link, Network, Transport, Session, Presentation, and Application [fig. 2]. In the OSI model, physical infrastructure is the deepest, first layer, while higher layers point upwards to the seventh layer of software operations and user interfaces, articulating the simplest and most general stratigraphic chart of digital networks. The tense stratification of real and virtual, online and offline spaces, with its own plate tectonics and fault lines, was diagnosed by science fiction author Neal Stephenson in his 1996 essay “Mother Earth Mother Board,” which chronicles the installation of the longest (at the time) submarine communication cable. In the essay, Stephenson notes the parallels between virtual and geological spaces:

Wires warp cyberspace in the same way wormholes warp physical space: the two points at opposite ends of a wire are, for informational purposes, the same point, even if they are on opposite sides of the planet.

The deep branches of network diagrams are mirrored by the under-sea depths where fiber optic cables have to be installed in order to span across continents: “if the network is The Computer, then its motherboard is the crust of Planet Earth,” Stephenson continues. The emergent process through which a planetary network infrastructure came into being (Bratton 2015) relied on a set of reductive spatial metaphors like ‘information superhighway’ and ‘global village’, which were still rooted in regional discursive regimes (Paasonen 2009, 20). As geographers have recognized, it is critical to question the spatial metaphors of information networks and the imaginaries developing around concepts like cyberspace, as they can easily lead to inaccurate or even harmful governance policies (Graham 2013, 177). As the geopolitics of infrastructure, internet service providers, search engines, social media companies and other forces complicate the global, regional and national scale of the internet, its spatial imaginaries are witnessing a “revenge of geography on cyberspace” (Rogers 2013, 40), in which “each network redoes network space in ways that are often different from the infrastructural network models that preceded them” (56). And this reconfiguration is not only infrastructural and geographical, but reaches down into the ‘further hidden depths’ of geology, where the digital is shaped by forces operating at new material and temporal scales (Parikka 2015).



**Figure 1** Network topology of ARPANET from the 1997 *ARPANET Completion Report*, topological map of the Discworld MUD created by player 'choppy', a 1994-95 conceptual map of cyberspace by John Deceber, and an interactive website map by Dynamic Diagrams. All reproduced from Martin Dodge's Cybergeography Research website (1997-2004)



**Figure 2** Diagram of the 7-layer OSI model as of 2009, including modifications made by 802.11 standard and 802.11e amendment. Creative Commons: <https://commons.wikimedia.org/wiki/File:OSI-80211e.png>

### 3 96% Submerged: The Deep, Dark Web

“You have finally reached the end of the internet!”, the page says.

There’s nothing more to see, no more links to visit. You’ve done it all. This is the very last page on the very last server at the very far end of the internet.

The HTML file accessible at the address [www.hmpg.net](http://www.hmpg.net) is one of the many ends of the internet, web pages humorously purporting to be the most faraway places in the world wide web.

“Wow!!! You have reached the very last page of the Internet. We hope you have enjoyed your browsing. Now turn off your computer, and go have fun,” another one found at [www.internetlastpage.com](http://www.internetlastpage.com) reads. “In case you are wondering, the end of the Internet is located way up in the cloud. You can’t go any further from here. YOU MUST NOW START BACK AT THE VERY BEGINNING!”, adds [www.endoftheinternet.com](http://www.endoftheinternet.com). As website KnowYourMeme reports, the ‘Last page of the internet’ phenomenon emerged in the late 1990s as a parody of the web’s seemingly endless nature and has remained surprisingly relevant across the subsequent decades.<sup>2</sup> Folklorist Lynne S. McNeill (2009, 86) has theorized that this phenomenon evidences the conflation between web and internet fueled by the ten-fold explosion of web servers in 1997, which resulted in large numbers of users experiencing this new information system as their main interface with the internet. She argues:

If the Internet were a book, actually able to have a last page, its hyperlinked nature - where within a given page there are one or more links to other pages containing related information - makes the Internet read less like a novel and more like a Choose Your Own Adventure book. [...] I believe that it is this quality of the Internet, the overabundance of options, which made the idea of the ‘end’ of the Internet such an appalling one to early users. (90-1)

As the World Wide Web expanded the internet through a sprawling mesh of servers, its spatial imaginary shifted towards a different set of metaphors, and older referents like the dungeon persisted as parodies in phenomena like the ‘end of the internet’ or ‘final boss of the internet’ memes. This new web imaginary was largely horizontal - a seemingly endless sprawl of *homepages* (Chandler 1998)

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<sup>2</sup> “The Last Page of the Internet”. *KnowYourMeme*. <https://knowyourmeme.com/memes/the-last-page-of-the-internet>.

characterized by the amateur aesthetics of ‘under construction’ signs and starry sky backgrounds (Lialina 2009), organized in communities and neighborhoods on hosting services like GeoCities: web addresses, access counters, guestbooks and web rings functioned as the social “wiring” (Kirshenblatt-Gimblett 1996) that supported an imaginary of surface zoning clearly patterned on the American suburb (Mitton 2015). Cyberspace and its dungeons had been successfully flattened.

And yet, around the turn of the millennium, depth returned under a new guise: the web had become *too* sprawling, and an increasing amount of information was unindexed and hence unretrievable. Jill Ellsworth referred to this unindexed information as the “hidden web” (1994), and various proposals outlined measures to address the problem (Kautz, Selman, Shah 1997). In a white paper written for his internet content company BrightPlanet, Michael K. Bergman drew on oceanic metaphors and coined the term ‘Deep Web’ to describe a similar layer of unindexed information and dynamically created pages:

Searching on the Internet today can be compared to dragging a net across the surface of the ocean. While a great deal may be caught in the net, there is still a wealth of information that is deep, and therefore, missed. The reason is simple: Most of the Web’s information is buried far down on dynamically generated sites, and standard search engines never find it. [...] Because traditional search engine crawlers can not probe beneath the surface, the deep Web has heretofore been hidden. (Bergman 2000, III)

Bergman’s Deep Web concept outlined a clear value proposition: if information is a commodity, the Deep Web contains a lot more of it than the surface web – 400 to 550 times more, according to his estimates; around 7,500 terabytes, 550 billion individual documents and 200,000 websites (IV). Search engine crawlers only skim the surface web, ignoring the “tremendous amount of high quality content ‘hidden’ behind search forms, in large searchable electronic databases” (Raghavan, Garcia-Molina 2001, 1).

In the early years of the commercial Web, depth became synonymous with data quality, and new techniques were developed to extract value from this ‘deepened’ reservoir of information (He et al. 2007), including vertical search engines and web surfacing systems (Madhavan et al. 2008). By the end of the 2000s, post-9/11 securitization had caught up with the internet and studies highlighted how terrorist groups used the ‘Dark Web’ to recruit, communicate and share information online (Chen et al. 2008). This discursive chain – from hidden to deep to dark – highlights a recurring pattern in which technical aspects and emerging features of information systems are imagined in spatial terms and then correlated to value judgments. By the

mid-2010s, popular coverage around the dark web was characterized by the typical traits of moral panics about the internet, while more tech-savvy users started exploring it as an option for privacy in a post-Snowden world (Gehl 2016, 1222-3). Often conceptualized as the further corner, deeper segment or bottom layer of the Deep Web, the Dark Web is a “treasure trove” (Weimann 2016, 197) of content that is intentionally concealed (Finklea 2017). In the most common visual metaphor used to explain this vertical layering, the Surface Web is depicted as the tip of an iceberg, the Deep Web as the bulk of its submerged part, and the Dark Web as a very small portion of its lower reaches (Chertoff 2017, 27). Rather than open databases and platform content, the Dark Web is made of purposefully encrypted information provided by “hidden services” (Faizan, Khan 2019) with private IP addresses and unintelligible URLs, which can be accessed through VPNs, the Tor browser and its Onion routing protocol, or other web tunneling solutions. On the Dark Web, hidden services like Silk Road facilitate the purchase of drugs, weapons, child pornography or even assassinations (Kaur, Randhawa 2020). Much like the abyssal and hadal zones of the ocean, the lowest reaches of the Web became associated with the darkness and murkiness of inhospitable depths (Hatta 2020).

While both the Deep Web and the Dark Web remain rather irrelevant (or, at least, infrastructurally invisible) for most everyday internet users, the imaginary of vertical depth and progressively mysterious abysses has become a popular theme in digital folklore. One key example is the ‘Iceberg Tier’ exploitable meme format, which revolves around an image or rendering of an iceberg floating in the ocean that is captioned with various terms, topics, names, or objects and divided in vertical tiers going in a descending order from the commonly known (the tip of the iceberg) to more and more obscure knowledge (the lower, submerged parts). According to popular histories of this exploitable format, the Iceberg Tier was used since at least 2011, has then become widespread on message boards like 4chan, and has eventually been adopted across multiple fandoms and social media publics.<sup>3</sup> The first reported example of the Iceberg Tier meme is clearly connected to the Deep Web and Dark Web, as it is titled *The Internet (more or less)* and humorously maps various social media platforms and services popular in the early 2010s (Facebook, YouTube, Reddit, Digg, 4chan, Tumblr, LiveLeak, etc.) all floating near the sea surface, while services like PedoPlanet, Hidden Wiki, Hard Candy and OnionChan occupy the lower half of the iceberg [fig. 3]. At the very bottom, a small ice protuberance is captioned with “Has anyone really been far even as decided to use even go want to do look

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<sup>3</sup> “Iceberg Tiers Parodies”. *KnowYourMeme*. <https://knowyourmeme.com/memes/iceberg-tiers-parodies>.

more like?" - a nonsensical sentence meant to convey the abstract semantic horror of the utmost internet depths. Other examples from the mid-2010s expand on the imaginary of the Deep Web by going far deeper than the bottom of the iceberg into a black abyss featuring captions like 'gore', 'exotic animals trade', 'headhunting', 'sex tourism', 'AIM/MSN/YIM/Skype Log Database', 'bugchasing/STD', 'snuff', 'human trafficking', 'corpse disposal instruction', 'alternative energy research' and, at the very bottom, 'classified government documents'.

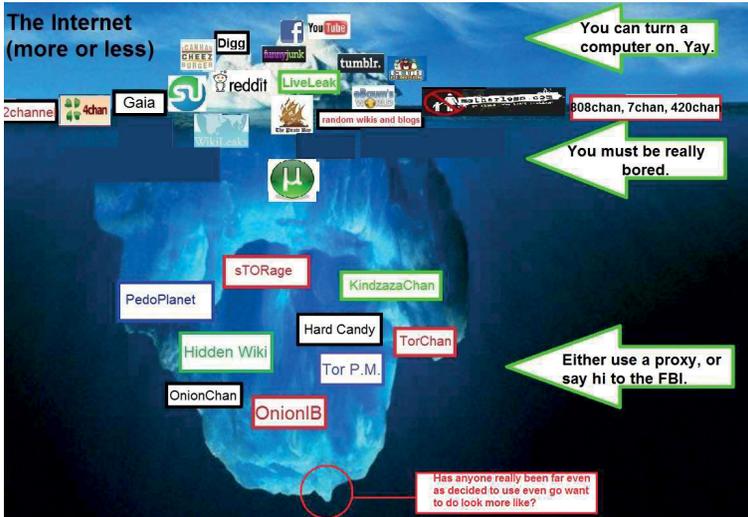


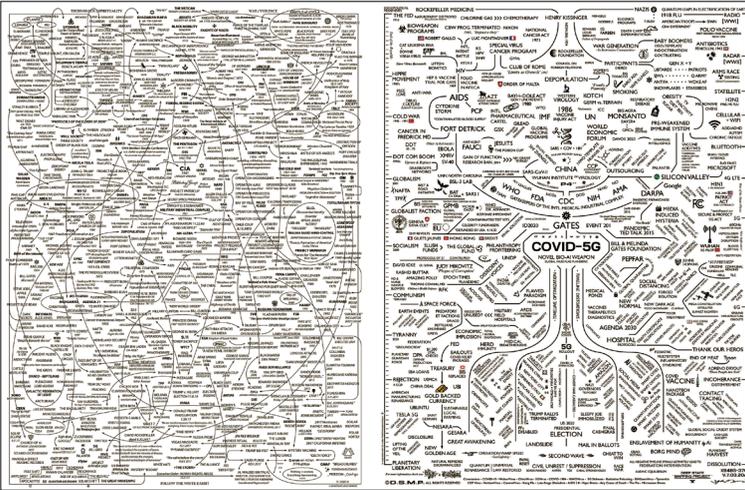
Figure 3 The first documented 'Iceberg Tier' meme, uploaded to image hosting website Imgur on May 31st, 2011 by an anonymous user. <https://imgur.com/oD0R4>

Over more than a decade, iceberg memes have been used to ironically map cultures of distinction and specialist knowledge across countless domains - from music and YouTube personalities to horror video games and Google Maps anomalies - but their origin in the Deep Web mythos preserves a generalized logic that equates the surface with commonplace knowledge and layered depth with technical skill, hidden information, prized data, murky ethics, esoteric literacies and government secrecy. This mythos is not limited to the iceberg format, but expands into creepypasta texts and urban legends like the 'Mariana's Web' myth (Violet Blue 2015), a purported deepest level of the internet accessible only via quantum computers running a complex algorithm called 'Polymeric Falcighol Derivation', where one can find 'WW2 Experiment Successes', the 'Location of Atlantis', 'CAIMEO (AI Superintelligence)' and 'Geometric Algorhythmic [sic] Shortcuts', among many other more or less fictional things. Another explain-er details three more layers accessible beyond the Mariana's Web:

Level 6, The Fog/Virus Soup and the Primarch System. Accessing these last layers are reserved for the ultra brave, as it may pose some risk to your own life mostly because of the types of information floating around here (think human trafficking and drug lords). The last layer is as mysterious as the Matrix. For our purposes, you may think of it as the Matrix 3 movie and you require Neo type awakened skills (plus Max Plank [*sic*] level of genius -he was credited with the birth of quantum theory) to access this level. (du Rand 2022)

This sort of digital folklore operates by recursively intensifying the Deep and Dark Web debates of the 2010s while also harking back to the early technical explorations of the hidden web - a wholly fictional layer like the Primarch System is described as an information environment beyond human comprehension and governmental control, “an anomaly at the heart of the Deep Web that was discovered by super Deep Web scans in the early 2000s” (Joshi 2021).

At these depths, networked web imaginaries overlap with the repertoire of conspiracy theory - for example, the complex charts created by the Deep State Mapping Project and disseminated by the U.S.-based QAnon political movement [fig. 4] rely on similar vertical levels of depth (historical, ideological, or technological) to expand the flat network metaphor into intricate webs of political power, religious cults, or COVID-19 conspiracies (Monroe 2022). It is not a coincidence that these diagrams purport to map the ‘deep state’ - a term popularized in the U.S. during the Trump presidency to indicate a purported network of actors exercising power from inside the federal government: Dylan Louis Monroe, the designer of these charts also known as ‘The Mapmaker’, describes his work as part of a combined effort to defeat a ‘Luciferian Cabal’ that successfully installed itself into power (Paul 2020). In the span of three decades, digital depth shifts from being a fortuitous explanatory metaphor to a generative logic for folk theorizations emerging in response to sociotechnical worlds of increasing complexity.

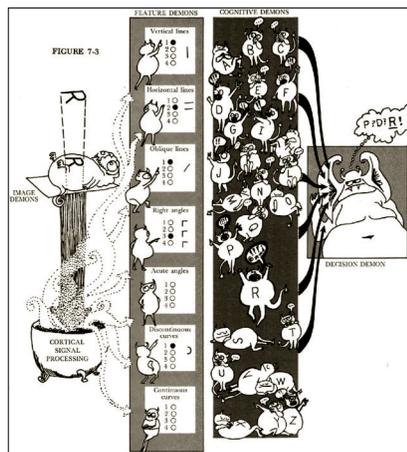


**Figure 4** Two intricate conspiracy flowcharts combining vertical depth (historical and technological progress) with sprawling connections between actors. Q-WEB v.1.22.23 (2018, left) and COVID-5G V.40721 (2021, right), both by Dylan Louis Monroe's Deep State Mapping Project

#### 4 Just Add One More Layer: The Depths of Machine Learning

The obscure algorithms and sentient AIs found in myths about the deepest levels of the dark web are not simply science-fictional tropes imported into digital folklore but are also grounded in a domain in which depth plays an important conceptual role: machine learning. While deep learning has entered popular debate in the early 2010s, the developments of deep neural networks have a century-long history beginning with the Ising model from the 1920s and the connectionist Perceptron model outlined by McCulloch and Pitts in the 1940s. In 1959, mathematician and artificial intelligence pioneer Oliver Selfridge proposed a theoretical model of how the brain processes visual perception. This model, called Pandemonium, was based on a key idea: having multiple systems processing information in parallel, breaking down an image into its constituent patterns and relying on the recognition of these features to output a decision. In keeping with its name, the Pandemonium architecture was populated by 'demons' – a fantastical equivalent to neurons – arranged in four independent groups layered from bottom to top: an image demon, feature demons, cognitive demons, and a decision demon [fig. 5]. After identifying an image, the feature demons in the second layer would scream accordingly to the feature they detected; hearing their yelling, the cognitive demons would in turn start wailing depending on

which image they thought the features composed; eventually, the decision demon on top would evaluate the loudest screaming from the cognitive demons, and come up with a decision, predicting the most likely content of the input image (Boden 2018, 13-14). This pandemonium of demons, with its four layered groups of independent processing units, is one of the earliest computational models of pattern recognition; while its theoretical solidity has been questioned, its key intuition of parallel information processing has been confirmed by neuroscience and its innovative architecture has inspired decades of artificial intelligence research culminating in recent machine learning advancements. Despite its groundbreaking architectural features, the Pandemonium would not achieve the same popularity as the Perceptron model implemented by Frank Rosenblatt in 1958, which was similarly organized in layers of perception, association and response units. The Perceptron did not need a pre-analysis of its inputs, and was capable of a form of self-organizing learning based on neurodynamics. After being at the center of theoretical controversies (Olazaran 1996), it was rediscovered in 1986 with the return of connectionism after decades of symbolic artificial intelligence research and is today recognized as a pioneering example of ‘parallel distributing processing’ and the first modern artificial neural network (Boden 2018, 15-16).



**Figure 5**  
 Illustration of Selfridge's 1959 Pandemonium model architecture, drawn by Leanne Hinton (Lindsay, Norman 1972). Demon layers, or groups, are stacked from left to right

While the second wave of connectionism improved the perceptron model by adding intermediate hidden layers, the third wave gathered momentum in the early 2010s thanks to the availability of large datasets and powerful GPUs (graphics processing units) that could allow the training of models with multiple hidden layers (Rel-la 2023). It is these multilayered models that have formalized the

use of depth as an explanatory and structural metaphor in artificial intelligence research: *deep neural networks* consisting of multiple stacked layers of artificial neurons enable *deep learning*, the capability to extract high-level features from a low-level input. As computer science researchers realized, machine learning algorithms developed for shallow architectures could be easily applied to neural networks, since

deep architectures seem a natural choice in hard AI tasks which involve several *sub-tasks* which can be coded into the layers of the architecture. (Weston et al. 2012, 2)

The introduction of convolutional neural networks (ConvNets or CNNs) allowed performance improvements by simply increasing the width and depth of the neural network. As the authors of Inception,<sup>4</sup> a milestone in CNN architecture, explain:

the word ‘deep’ is used in two different meanings: first of all, in the sense that we introduce a new level of organization in the form of the ‘Inception module’ and also in the more direct sense of increased network depth. (Szegedy et al, 2015, 2)

The advantages of network depth have been widely recognized, and yet some researchers questioned the need for neural networks to be deep, demonstrating that shallow networks could perform as well as deep ones, and that “depth may make learning easier but may not always be essential” (Ba, Caruana 2014, 9).

Research has proven how the depth of convolutional neural networks has an effect on accuracy in tasks like image recognition (Simonyan, Zisserman 2015), while others have argued that increasing network depth does not necessarily improve performance (Sun et al. 2015). If the role of depth in deep learning remains a contested attribute, computer scientists seem to agree on its straightforward, technical meaning: “Deep learning isn’t really deep in thinking terms, as these networks utterly lack any ability to deal in abstract concepts” (Buchanan 2018, 326).

In a comprehensive 2022 volume titled *The Principles of Deep Learning Theory*, Daniel A. Roberts and Sho Yaida connect most of the successes of contemporary artificial intelligence to depth:

The real power of the deep learning framework comes from *deep* neural networks with many neurons in parallel organized into

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<sup>4</sup> Szegedy and coauthors have named their CNN architecture after Christopher Nolan’s *Inception* movie because of its “we need to go deeper” line of dialogue.

sequential computational layers, *learning* useful representations of the world. Such representation learning transforms data into increasingly refined forms that are helpful for solving an underlying task and is thought to be a hallmark of success in intelligence, both artificial and biological. (1)

And yet, despite these successes, the authors note that deep learning is still lacking a solid theory of depth, as “very little theoretical work directly confronts the *deep* of deep learning” (2).

In search of an effective theoretical description of deep neural networks, Roberts and Yaida focus on large networks with finite width, going back to the multilayer perceptron as the most basic model of a network iteratively composed of structurally similar layers (37). “Depth,” they conclude, “is a double-edged sword” (64), as deeper networks tend to have higher margins of error and are less stable; overall, the pursuit of deeper neural networks remains an empirical preference grounded in the observable results of multilayer architectures rather than on a solid theory of how learning works at these depths (191).

This overreliance on depth has become the punchline for several computer science jokes, including the *Inception* reference mentioned above or the *Stack More Layers* meme depicting a concerned computer scientist giving precise technical instructions trying to fix an overgeneralizing statistical learning model while a cross-eyed jester working with neural networks simply prescribes the simplest iterative solution [fig. 6]. Regardless of how undertheorized depth is in machine learning research, it is undeniable that computer scientists and artificial intelligence companies rely on its semantic mystique to promote products and services. Through his comparative study of IBM’s Deep Blue and DeepMind’s AlphaGo, Paolo Bory (2019) demonstrates how companies “used the human-machine competition to narrate the emergence of a new, deeper, form of AI” (627).

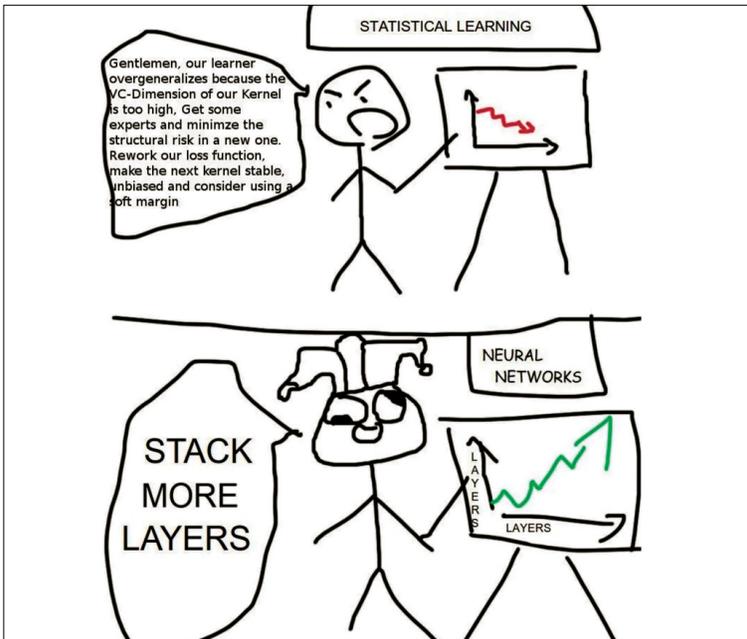
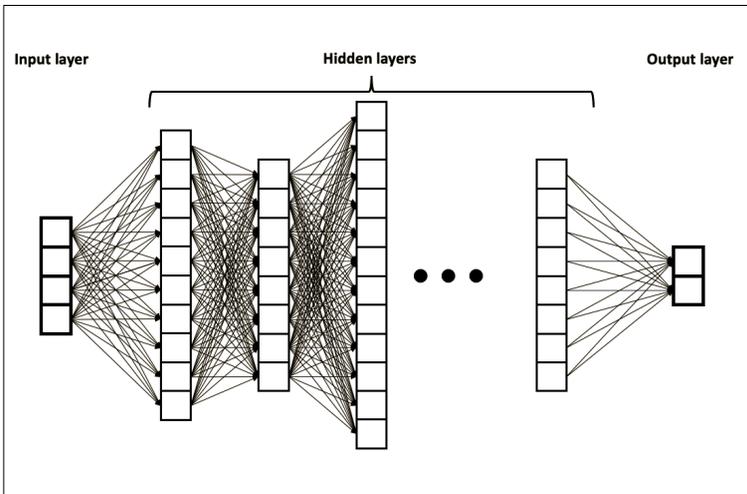


Figure 6 Stack More Layers meme, posted on the r/ProgrammerHumor subreddit in 2018 by an unnamed user, now deleted. [https://www.reddit.com/r/ProgrammerHumor/comments/8c1i45/stack\\_more\\_layers/](https://www.reddit.com/r/ProgrammerHumor/comments/8c1i45/stack_more_layers/)

IBM and AlphaGo mobilized different strategies to stage the ‘deep new’ of artificial intelligence - the former, in 1997, relied on secrecy and hardware blackboxing, while the latter, in 2016, openly showcased software visualizations and dynamic data feeds. Their intent was similar: foregrounding the deep knowledge and creativity that their AI agents were capable of displaying. Even when depth is understood in its metaphorical sense as the spatial relationship between stacked layers, which many technical diagrams model on the visual vocabulary of stratigraphy [fig. 7], the depth of neural networks is by necessity more abstract, since “binary and linear forms of classification are compounded into hyper-planes of multidimensional classification” (Belisle 2021, 339) that transcend the human capacity to visualize their structure. As Taylor Arnold and Lauren Tilton (2021) argue, depth in machine learning transcends its technical meaning and diffracts into at least three connotations:

*knowledgeable*, the accuracy displayed in the model’s ability to excel in certain image process tasks; *layered*, a visualization of the learned hierarchical structures; and *impenetrable*, the inherent lack of interpretability and understanding (such as in the ‘deep sea’ or ‘deep space’) of their algorithmic operations. (310)

While the stacked layer structure is likely to have been the origin of the term ‘deep neural networks’, it is also the case that this structure is conducive to solving tasks, like image recognition or voice synthesis, that are deep in complexity; similarly, the depth of multilayered neural network architectures results in their opacity to human interpretability (319). In short, deep network structures lead to both deep knowledge and deep opacity, relating different kinds of depth beyond their shared English-language term (321). This multilayered connotation of depth in machine learning helps explaining the complex mixture of fascination and fear, realism and uncanniness, perfection and faultiness that characterize cultural phenomena like deepfakes and corporate products like DeepDream – applications of deep learning that bring the unfathomable depths of parallel distributed processing to a user-friendly surface of inputs and outputs.



**Figure 7** Simplified structure of a deep neural network. Diagram by BrunelloN (2021). Wikimedia Commons, licensed under the Creative Commons Attribution-Share Alike 4.0 International. Source: [https://commons.m.wikimedia.org/wiki/File:Example\\_of\\_a\\_deep\\_neural\\_network.png](https://commons.m.wikimedia.org/wiki/File:Example_of_a_deep_neural_network.png)

## 5 Volumetrically Digital

The vectors orienting the various sections of this article, pointed up and downward vertical volumes and cutting across multidimensional strata support the claim that, contrary to commonplace imaginations of digital media as mirroring surfaces and of digital communications as flattening forces, the digital does indeed have its own peculiar depths. Without falling into the fallacy of opposing surface and depth as an ontological binary, it can be recognized that digital depth is profoundly entangled with its corresponding surfaces (Parikka 2021, 290). From a volumetric perspective, digital depth is not vertical in a strictly three-dimensional sense; lacking a consistent ground or territory to anchor it, neither is it limited to a single directional vector or spatial variable. There are the material, structural depths of digital data and infrastructures, as well as the metaphorical, imaginary depths of digital media and artificial neural networks, all coexisting and resonating with, reinforcing and disrupting one another in mutable ways. This multiplicity of depths corresponds to a multiplicity of volumes. In the most basic material sense of physical computing, a *volume* is an identifiable area of data storage – usually a hard drive – with a single file system recognizable by an operating system. The exponential growth of computational capacity has led to the need for new measures of the information produced and stored on a global scale: *data volume*, the total amount of data created, copied and consumed globally, has reached 64.2 zettabytes in 2020, and is projected to exceed 180 zettabytes by 2025 (Statista 2023). These volumetries are mathematically quantifiable and yet often exceed the grasp of human perception, demanding new ways to probe and make them interpretable, or at least explainable. At the same time, as demonstrated by the early experiments with textual games and narratives, users actively create new depths through the affordances of interactive media, carving volumes into programmable interfaces and establishing dwellings at the frontiers of digital spaces. The history of cyberspace, from its dungeon-like precursors to its sovereign zoning by code and law, outlines a recurring historical pattern of digital depth: a surface is breached, its interior domesticated through iteration and experimentation, its farthest reaches deemed too deep for mass adoption, and its verticality reined in through connections and synchronizations with orthogonal systems (sovereign states, laws, economies, etc.). This dynamic is evidenced by the parallels between the wizard-ruled MUDs and the hidden services of the Dark Web, which both pitch irreducible depths of arcane knowledge and illicit practices against the layered regimentation of infrastructural protocols like the OSI framework or megastuctural models like the Stack (Bratton 2015).

As illustrated in this article, digital depth both derives from and defies established conceptions of volumetry: from databases to

datasets, from randomly-generated corridors to machine learning algorithms, the *deep* runs in parallel with the *digital*, continuously yet unpredictably oscillating between structural description and metaphorical explanation, technical aspiration and mystifying imaginary. Even at its most fictional, digital depth is irrevocably patterned on the terrestrial, oceanic and cosmic depths that have structured modern and postmodern debates around the topic. Cyberspaces riddled by caves, corridors and dungeons, Deep Web icebergs floating over oceanic dark web abysses, computational systems spanning cloud servers and undersea cables, and stacked layers of artificial neurons hidden in the architectures of machine learning models. And yet, a remainder of epistemological incommensurability persists at the core of every aspect of digital depth, an uncomputable kernel that attracts attention and dares delving towards it: the perfect, infinite dungeon game; the bottom layer of the dark web; the hidden layer where the machine learns. This kernel, shared by many varieties of digital depth, is likely to be a trick of perspective, an externality of non-Euclidean dataspaces conceptualized through mundane spatial metaphors, but it still functions as an attractor around which imaginaries from folk theories to technical epistemes orbit, perturbing and influencing one another as their trajectories intersect. Andreas Hepp (2019) has suggested that the transformative relationship between media and society has entered a new historical moment:

digitalization has seen us emerge into a new stage of mediatization which we can identify as *deep mediatization* [...] an advanced stage of the process in which all elements of our social world are intricately related to digital media and their underlying infrastructures. (5)

According to Hepp, deep mediatization results from a combination of two features of the digital: increased interconnectivity and systemic layering (3-4). Digital media are not limited to communication, but their layered infrastructures afford the generation of data and the automation of large technical systems: depth is a feature of the current condition of mediation at large. Jeff Scheible (2021) has proposed that this new stage of mediation correlates to a substantively different “modality of depth,” one that is “quantitative, datafied, and a dominant characteristic of computing technologies and epistemologies of the early twenty-first century,” which he proposes to call “informativ depth” (106). This article concludes by combining these two concepts and arguing that the deep mediatization brought about by pervasive informatization has been accompanied by new varieties of digital depth. Thinking about the digital in volumetric terms helps avoiding binary oppositions and allows the multiplicity of different kinds of depth to unfold – some alongside diverging vectors, others across parallel or intersecting planes. From the

narrative descents of text-based adventures to the multidimensional vector spaces of machine learning models, this multiple depth anchored by layering and interconnection might be an emergent and pervasive feature of the digital. As planetary computation and deep mediatization reshape societies around the globe, new models are necessary to conceptualize digital depth; combining megastructural scale and layered verticality, procedural generation and endless variation, the expanded concept of megadungeon proposed by this special issue might be a productive blueprint to speculate about depth and its relationship to the digital.

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# Mapping Our Digital Menagerie: A Monster Manual for the Megadungeon

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**Abstract** Relying on a comparison between the complex spatial organization of our current digital ecosystem and the ones from dungeons in role-playing games, this article analyzes the multiple entities that populate our computers, smartphones and video game consoles. Trolls, bugs, worms, conversational AI agents, NPCs, daemons, ghosts, Trojan horses and others are presented and discussed with a focus on their different degree of agency, ranging from human-controlled to having a certain degree of autonomy. By addressing how we coexist with such beings, this paper contributes to the nascent field of digital folklore.

**Keywords** Digital folklore. Monster. Megadungeon. Agency. Digital culture.

**Summary** 1 Introduction. – 2 Mapping the Digital Menagerie. – 3 Abstract Entities. – 4 Emergent Beings. – 5 Digital Janitors. – 6 Everyday Companions. – 7 Reflecting on the Monster Manual.



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## 1 Introduction

Bulletin board discussions,<sup>1</sup> video games, debate and flame<sup>2</sup> wars in forums and newsgroups, peer-to-peer file sharing, internet memes, ASCII art<sup>3</sup> and fanfiction,<sup>4</sup> the blossoming of specialist online encyclopedias, Pokémon hunts in our city streets. Researchers from fields including Science & Technology Studies (STS), media and communications, anthropology, and linguistics have explored the range of practices and platforms enabled by the advent of the personal computer, and subsequent mass diffusion of the internet and mobile devices. From early in the development of new media, researchers have probed the practices created by these new information and communication technologies (Manovich 2001), exploring the varied spatialities of our digital socio-technical complex.<sup>5</sup> Such efforts have given rise to various megastructure metaphors; as, for example, in Bratton's use of the 'Stack' to describe the digital complex's gigantic organization, a layering of computational systems: user, interface, address, city, cloud, Earth (Bratton 2016). Another such metaphor is the 'megadungeon', which extends the repertoire of geospatial forms describing the vast hybrid complex produced by intersecting computational and socio-technical systems (Berti, de Seta, Fischer 2022). This term conjures phantasmatic visions of an enclosed space sometimes underground, sometimes in a built environment, containing multiple encounters. Inherited from the 'dungeons' of role-playing and video game cultures, in this context, the dungeon is a mysterious, quasi-infinite setting for collective adventures, rather than a series of underground cells in

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**1** Bulletin board systems allowed people to connect to a server with a terminal program in order to read news, exchange messages with others through public message boards and sometimes direct messages, as well as upload/download data or software.

**2** Flame wars are exchanges of angry or abusive messages between online users, often attributed to the lack of social cues or accountability compared to face-to-face communications.

**3** ASCII art is a graphic design technique that consists of pictures pieced together from the printable characters defined by the standard from the American Standard Code for Information Interchange, a character encoding standard for electronic communication.

**4** Fanfiction is fictional writing written by amateurs, unauthorized by, but based on, existing works of fiction. Although fanfiction existed before the popularization of the Web, it found a mass audience online.

**5** Addressing, for example, digital networks (Castells 1996), cartographic representations (Dodge, Kitchin 2000), or the circulation of common spatial metaphors (Jamet 2010; Markham, Tiidenberg 2020). Others have critiqued simplistic oppositions of the real/virtual (Shield 2005), stressing the importance of not neglecting the material dimension on which online practices are based (Blum 2012; Parks 2015), and the legal and political facets of digital infrastructure (Zittrain 2008).

which prisoners are held (as explored by Bishop 2019). In this respect, the ‘megadungeon’ of our digital ecosystem is a spatial metaphor reflecting the networked configuration of online worlds. As the authors who coined this idiom describe, the megadungeon is a “vertical multi-level labyrinth of interconnected passages that plays a central role in worldbuilding” (Berti, de Seta, Fischer 2022), reflecting the links between network nodes, be they hyperlinked web pages, chatrooms or virtual rooms in an online world. The term also allows us to describe a new, computational dimension of the contemporary dungeon: its spatial configuration produced by algorithms, which can produce a potentially infinite variety of such structures.

Metaphors of the Stack and the Megadungeon underline the growing complexity of online spaces, following developments in digital interfaces, data analysis, the efficiency of communication networks, and increasing computing power. Digital social networks, persistent virtual worlds and the many tools that enable us to spend time online are constantly acquiring new functionalities. Among these, a growing presence of automated functions and persistent autonomous agents that continue to exist, even in our absence, form new conditions of our digital life.

In role-playing games (RPGs), dungeons are synonymous with encounters, sometimes with sympathetic characters and potential allies, but also with creatures that are often difficult for the players to discern as alien. The dungeons of RPGs and online games are inhabited by a variety of fantastic entities, from famous dragons to laughing wizards with flying pets, to the gelatinous cubes and low-level trolls described in the *Dungeons & Dragons (D&D)* fantasy role-playing game’s ‘Monster Manual’. Modeled on “medieval bestiaries”<sup>6</sup> (Švelch 2013), this compendium became an archetypical template for documents shared across various games, digital or otherwise; a generic term designating any catalog of monstrous beasts and potential encounters. Such a bestiary begs the question: which entities populate *digital* megadungeons? How do they manifest? What would a megadungeon monster manual include?

Think of chatbots and other virtual agents, non-playable characters (NPCs) and their sprite representations, viruses and bugs in our machines, oracles like Google Search and Bing, LOLcats, powerful abstractions like Large Language Models and even the trolls that populate social networks. Investigating these creatures is an interesting corollary to describing the ‘new digital volumetries’ of the megadungeon. Grasping the diversity of such entities, understanding

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<sup>6</sup> Popularized in Europe in the Middle Ages, bestiaries were illuminated manuscripts that compiled descriptions of animals, both real and mythical, often including detailed illustrations and moralistic or allegorical interpretations.

how and where they manifest, and appreciating their configurations of agency are important in understanding how the megadungeon is not an empty infrastructure, but a teeming ecosystem, and a vital backdrop to everyday lives lived online.

This task is all the more pressing considering how so much of the attention given to technological entities has focused on robots and other physically-embodied creatures - which are often prototypes (Honda's Asimo), expensive consumer products (Sony's Aibo) or machines designed for military or police applications (Boston Dynamics' Big Dog). Leaving aside these creatures, my intent is to focus instead on the less-described digital denizens of the megadungeon, whose limited attention from researchers is out of step with their presence in our digital daily lives. Without aiming for an encyclopedic treatment of such a subject - as in the multitude of works about such creatures in various folklore or role-playing communities - this article asks what these digital entities are, in concrete terms, for those who live alongside them; their creators and users, and those who suffer their presence. Drawing on academic and popular literature describing such creatures, I propose a mapping, and reflect on some of the categories that can meaningfully describe their different facets and qualities.

However, it is not my intention to compile a bestiary that simply catalogs descriptions of various creatures. Instead, the idea is to propose a classification to help organize our understanding. While I take into account advanced technologies, such as recent generative AI techniques, my primary goal is to characterize these entities and highlight their presence in our everyday lives. This is why I chose the term 'menagerie' to describe these creatures; an expression designating a collection of rare or exotic animals kept in captivity so that they can be viewed by the public. For even if I am interested in the proximate, almost domestic, character of these entities, the fact remains that they are stranger than everyday animals, and there are still connotations of exoticism and curiosity to encounters with viruses, LLMs, bugs, Pokémon or recommendation algorithms.

This work adopts a digital folklore approach, after Gabriele de Seta, addressing "online contents, interactional scripts, and communication genres that seemed as trivial and mundane as they were fundamental and central to the everyday use of this new medium" (2019, 168).

My investigation of the digital menagerie supplements the approach theorized by de Seta: not just capturing the vernacular or memetic creativity of users of digital technologies, but also apprehending the animate beings that surround them; with the intent of understanding how we encounter them in ordinary, everyday life.<sup>7</sup>

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<sup>7</sup> This work is part of a wider research effort, described on the Machine Mirabilia weblog: [machinemirabilia.wordpress.com/](http://machinemirabilia.wordpress.com/).

The next section describes my approach to mapping this digital menagerie, reflecting on related work and the notion of the Monster Manual in the role-playing cultures from which the megadungeon derives. This is followed by a closer analysis of four identified sub-categories of digital entities ('abstract entities', 'emergent beings', 'digital janitors', and 'everyday companions'), and concludes with a reflection on the broader implications of this work.

## 2 Mapping the Digital Menagerie

Although this article focuses on denizens of the digital megadungeon, it echoes other, earlier attempts to bring order to digital entities. In contemporary anthropology, for example, there have been various efforts to clarify the character and properties of digital creatures, but most such efforts have focused on robots and Artificial Intelligence (Grimaud, Vidal 2012; Becker 2023). Comparing digital entities with other objects in the world, such as ritual masks, figurines, musical instruments or automata, these works demonstrate how such entities possess symbolic properties, yet are distinguished from other objects by the interactions they make possible.

For anthropological researchers, while there may be a tendency to attribute personality to conversational agents or AI systems, exchanges with these entities differ from interactions with a fellow human, or the bonds that are built with invisible entities, such as ghosts or gods - though we should not neglect the presence and role of technicism in specific cultural contexts (Jensen, Blok 2013). Motivated, perhaps, by an implicit desire to avoid reproducing the cognitive gestures of earlier folk studies, the resulting works do not aim to describe or categorize such entities, but focus, more generally, on their ontological status, agency, or the kinds of behavioral attributions they elicit.

Within STS, we find attempts to name and classify different digital entities, particularly those that fall within the register of the monstrous (Aanestad et al. 2018; Douglas-Jones et al. 2018). This qualifier is generally employed to "consider the 'ontological liminality' that is part of making monsters: the ongoing question, what are they?" (Douglas-Jones et al. 2018, 178), and to understand the effects of the differences represented by entities described as monsters, as proposed by Donna Haraway (1992). By listing and describing beast metaphors encountered in a project on digitization processes in Denmark, Douglas-Jones and her colleagues resurrect the bestiary format - and its epistemic practices of naming, describing and classifying - as a way of narrating anxieties, and exploring those sites where digital monsters are made.

In this contribution, I would like to focus as much on this process of naming and classifying as on the nature of digital creatures for the people who live alongside them. To this end, I have compiled a

corpus of entities whose existence relies on contemporary information and communication technologies. These include those entities mentioned by participants in my investigations into smartphone use (Nova 2020; Nova, Bloch 2020) and the artificialization of the world (Nova, Disnovation.org 2021), and those from a systematic survey of documentary resources found online and in print: including academic articles and historical references from computer science and human-computer interaction, articles in the general press, discussions on forums, blogs or social networks, extracts from programming manuals and tutorials, and the descriptive efforts proposed by dictionaries and encyclopedias produced by users, such as the Jargon File<sup>8</sup> or platforms such as *Fandom* or *Know Your Meme*. Terms were registered either through direct observation of user surveys or design documents, or synthetic reports in vernacular compilations of cultural practices, such as dictionaries and lexicons.

By analogy with the bestiary, from this corpus, I have included as an 'entity' any mention of an agent meeting the following criteria:

- embodiment in basic software on a computer, smartphone, tablet or game console; for example, an individual name (Bob, Clippy, Siri, ChatGPT) or, failing that, named category of entity (troll, virus, LLM, norns) accessible via a physical interface, or text or voice command. Note that this representation can sometimes exist visually, as in the case of video game characters (avatar, sprite) or more or less complex depictions (game of life);
- agency, with the entity performing actions or tasks with consequences for its environment, as generally expressed through an action verb or visual representation: Siri can provide the time and answer simple questions, ChatGPT generates text, a troll produces frustration by polluting a conversation, a LOLcat circulates, NPCs mill around in massive multiplayer games;
- a minimal presence in the discourse and practices of technology users, such that the entity is familiar to more than just a restricted circle of people.<sup>9</sup>

This compilation provided a corpus of 56 entities, excluding robots (Roomba, AIBO, Pepper, Nao, etc.) and historical automata

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<sup>8</sup> The Jargon File is a glossary and usage dictionary of slang used by computer programmers. Originally made of terms used in North-American universities and research institutes in the mid-1970s, it was published in book form in three editions as *The Hacker's Dictionary*, edited by Guy Steele and then by Eric S. Raymond. The collection evolved until 2003, including terminology from the internet and Web subcultures of the time, according to its last entry modification: <http://www.catb.org/jargon/submissions.html>.

<sup>9</sup> Practically, I selected only those that featured in descriptive documents (press, historical articles), online discussions, or field surveys.



as suggested by the megadungeon metaphor; in particular, classic *D&D* alignment charts, which are a common trope in this cultural universe.<sup>11</sup> This map gives an overview of the diversity of creatures we encounter through our smartphones, computers, video game consoles and other digital devices. Organized along the two axes, the map provides a kind of visual compass, clustering entities that are often considered individually, through a digital menagerie. The following sections describe the four identified categories, illustrated with examples from the corpus.

### 3 Abstract Entities

The first section of this map concerns the little-known entities of the megadungeon (the ‘niche’ section of the horizontal axis) whose behavior is not purposefully programmed into the system but emerges from its interaction with others and the environment (the ‘emergent’ section of the vertical axis). This category corresponds to the many experiments, computer models and prototypes developed in private and public research laboratories since the invention of the computer. Rooted in a context removed from everyday digital use, the common quality of these entities is their abstraction. Even if they have a name and recognizable behavior, their intrinsic complexity can make them seem enigmatic. Often lacking a clearly defined purpose or functionality, they are usually created as a demonstration of technical possibilities, or the simulation of an existing linguistic or behavioral process. Their abstract nature gives rise to fantasies: anger, fear or over-enthusiasm regarding their autonomy, calls to slow down research, and so on. This can be seen in the term ‘Artificial Intelligence’, which I have chosen to exclude from my corpus because of its overly general connotations, even though it is often used to designate a single entity.

In this first category of the monster map, different examples can be distinguished, depending on the degree of abstraction of the entities considered. Consider the simple mechanism underpinning the visual configurations of Conway’s *Game of Life*, a cellular automaton devised in 1970 by the British mathematician John Horton Conway. On a two-dimensional universe, a square grid contains cells that are

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**11** In *D&D*, alignment is a formulaic categorization of the ethical and moral perspective of player characters, non-player characters, and creatures. It is often represented as a matrix with a two-dimensional grid that separates characters into nine alignments, based on their moral and ethical beliefs: lawful good, neutral good, chaotic good, lawful neutral, true neutral, chaotic neutral, lawful evil, neutral evil, and chaotic evil. As a way of categorizing players’ characters, alignment charts help to determine how a given character should behave.

either alive or dead, with each cell's behavior determined by the state of its eight immediate neighbours (e.g. 'a live cell with zero or one live neighbours will die', 'a live cell with four or more live neighbours will die'). Different patterns appear on the grid, generated by the rules. Each pattern ('block', 'beehive', 'toad', 'beacon', 'glider', etc.) corresponds to a specific entity in the game's universe. Some of the earliest computer-based entities, these life-like configurations described as "fantastic combinations" (Gardner 1970), attracted growing attention, with people continuing to discover new patterns, such as the 'knightship' in 2018. Similarly, other Artificial Life<sup>12</sup> programs, such as the Boids ('bird-oid object') developed by Craig Reynolds (1987), or Karl Sims' "evolved virtual creatures" (1994), illustrate the different capabilities envisaged for digital entities in a 3D universe, from reproducing the swarming behavior of birds, to learning locomotion.

On the other side of the Artificial Life spectrum, with a much more elaborate complexity and due to their novelty, Large Language Models (LLM) such as GPT-4, LLaMa, or BLOOM form another type of abstract entity of this Monster Manual. Developed using artificial neural networks, and (pre-)trained on large amounts of data, mostly scraped from the public internet, these models are used to solve various tasks, including generating text, translation and solving problems.<sup>13</sup> Although the behavior of these entities is a form of emergence, based on an aggregation of different kinds of content, they are not truly autonomous. Their functionality relies on a series of human agents, who are paid to train, verify and sometimes imitate them (Tubaro, Casilli, Coville 2020).

High-frequency trading algorithms (HFTs) are another type of abstract entity, which has gained greater recognition among the general public over the past decade, due to their presence in the press, and connection with the turbulence of the financial markets. This category of sophisticated algorithms corresponds to trading systems characterized by high speeds and turnover rates that leverage high-frequency financial data and electronic trading tools. Posing new challenges to the financial system, these algorithms go by different names ('Iceberg', 'Dagger', 'Monkey', 'Sniper', 'BASOR') reflecting the obsessions of their designers. Nevertheless, they remain discreet, appearing only episodically in the media, business press publications (Ablan 2007), or in books by researchers in the humanities (Laumonier 2014).

<sup>12</sup> Artificial Life is a field of study that appeared in the 1980s, wherein researchers examine systems related to natural life, its processes, and its evolution, through the use of simulations with computer models, robotics, and biochemistry.

<sup>13</sup> AI conversational agents like ChatGPT, that I will discuss in another section, are distinct entities, since they rely on certain LLMs, like GPT-4.

Finally, as a possible intermediary between emergent behavior and human agency, the centaur is a particularly interesting example of an abstract entity. Named for the half-human, half-horse creatures of Greek mythology, this refers to a combination of human and ‘artificial’ intelligence, or, more concretely, a human-machine team, whose chess performance outclasses not just people but also the most powerful Artificial Intelligence systems (Xerox PARC, 2017).

## 4 Emergent Beings

The second category on the monster map, ‘emergent beings’, owes its name as much to these entities’ high profile as to their unpredictable behavior, a source of surprise and fascination for users of computers, smartphones and video game consoles.

Conversational agents and text generators fall into this category, demonstrating varying levels of complexity and conversational ability. ChatGPT (OpenAI), Ernie Bot (Baidu) and Bard (Google) are the best-known among such entities, following earlier bots such as Watson (IBM). The LLMs that underpin these agents enable them to construct coherent discourse, effectively mimicking style, detail and language diversity. This was less true of Tay, a Twitter chatbot released by Microsoft in 2016, which was rapidly suspended after producing a series of offensive postings, following inflammatory messages sent to it by certain users eager to make it learn racist and sexually-charged insults.<sup>14</sup> This category also includes ‘virtual girlfriend’ (and more rarely ‘virtual boyfriend’) applications such as PicSo.ai, KARI (Knowledge Acquiring and Response Intelligence) and Replika. Using less sophisticated machine learning techniques to replicate an apparent love relationship using specific conversation scripts and visual interactions, they question notions of intimacy and identity (Pettman 2009).

Some video game characters meet the requirements of this category of agents, displaying emergent behavior. Consider the simulations used in Artificial Life projects, such as the *Creatures* video game series (Millennium Interactive/Mindscape). Published since the 1990s, these games allowed users to interact in real-time with Norns, synthetic agents inhabiting a closed environment, with their own simulated biochemistry, haploid genetics, and neural networks (Mackie 2009). Among the multitude of Artificial Life simulations that have found a commercial outlet, 2008 real-time strategy game *Spore* (Maxis/Electronic Arts) tasked players with controlling the evolution of a

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<sup>14</sup> One could also consider Xiaoice, developed by Microsoft (Asia) Software Technology Center (STCA), which also had to be suspended from WeChat after giving responses critical of the Chinese government.

species, from its beginnings as a microscopic organism, through development as an intelligent social creature, to interstellar exploration, and encounters with other alien species. While these examples, among others, can be seen as extensions of the Artificial Life models in the previous category, their distinctive identity derives from their presence in widely-used, mass-market products, encountered by a much larger group of users.

To complete this category of emergent beings, it is worth considering two even more common types of entity, which are closely associated with difficult or uncontrollable computer and network incidents: bugs and viruses. The computer ‘bug’ has its origins in the Middle English word ‘bugge’, which was the basis for the idioms ‘bugbear’ and ‘bugaboo’, both used to describe monsters. While the term saw use in engineering, even before computers, describing mechanical malfunctions, it came into wider use in 1947, when computer pioneer Grace Hopper traced an error in the electromechanical Mark II computer to a trapped moth, giving the term its connotation of ‘glitch’ or ‘error’.<sup>15</sup> Though ‘bug’ is now less strongly associated with the creature, ‘software bug’ continues to personify errors, flaws or faults in a design, development, or operation of computer software, particularly those producing an unexpected behavior or an incorrect result. Viruses and worms are software that disrupt computers or networks, leaking private information, or gaining unauthorized access to systems – unknowingly interfering with the computer user’s security or privacy. Such software can take different forms (Tahir 2018), and its existence may have a range of motivations: intentionally designed by criminals interested in making money, they can also be created for political reasons, sabotaging government or corporate websites. Some viruses are self-reproducing, propagating themselves as ‘emergent beings’.

## 5 Digital Janitors

In the third quadrant – niche entities whose agency is largely controlled by human beings – we find a set of servants entrusted with simple tasks. Generally oriented towards maintenance, service and security activities, I refer to these entities as ‘digital janitors’. Reflecting the kinds of activities they discreetly take on, the term also evokes their relative invisibility and neglect, as is often the case for infrastructures and those agents that monitor and maintain them.

Among the most salient cases are those entities that support the infrastructure upon which our computer networks rely. These include

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<sup>15</sup> For more explanation, see the ‘Bug’ entry in the Jargon File: <http://catb.org/jargon/html/B/bug.html>.

daemons, computer programs running as background processes in multitasking operating systems such as Unix or macOS. Typically designated by process names ending in the letter *d* (reflecting their name), daemons perform various basic tasks: *syslogd*, for example, is a daemon that implements a system logging facility, while *sshd* takes care of incoming servers' SSH connections. The term 'daemon', coined by the programmers at MIT's Project MAC in the 1960s, is a reference to Maxwell's demon, an imaginary agent in physics and thermodynamics, envisaged as helping to sort molecules (McKelvey 2018; Canales 2020). The name also inherits some properties and associations from the 'demons' of Greek mythology, who discreetly intervened in human affairs.<sup>16</sup>

Similarly, *crons*, command-line utilities used for scheduling repetitive tasks on Unix-like operating systems, are sometimes personified as entities ('Why is my cron not working on my *dockerfile*?', I heard in a survey). At the heart of the common architecture of computer networks based on the exchange of requests via a remote machine, the 'server' can also be considered as part of this category of entities. The Jargon File defines the server as

a kind of *daemon* that performs a service for the requester and which often runs on a computer other than the one on which the requestor/client runs. A particularly common term on the internet, which is rife with web servers, name servers, domain servers, 'news servers'.<sup>17</sup>

Also in this category of digital janitors are the microworkers known as 'turkers' hired on Amazon Mechanical Turk (MTurk).<sup>18</sup> This crowdsourcing platform enables businesses to hire remotely-located 'crowdworkers' to perform discrete, simple tasks which computers are currently unable to do as economically as humans and are more abstract than the janitor-like microtasks performed by daemons: cleaning and processing data, identifying specific content in an image or video, adding tags, writing product descriptions, or answering survey questions. Although Turkers are humans, their agency is constrained and channeled by the platform, which offers a basic interface to let them browse existing jobs, completing them for a fee set by the employer. Jeff Bezos,

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<sup>16</sup> For more explanation, check the 'daemon' entry in the Jargon File: <http://catb.org/~esr/jargon/html/D/daemon.html>.

<sup>17</sup> <http://www.catb.org/jargon/html/S/server.html>.

<sup>18</sup> The name of this service was inspired by 'The Turk', a chess-playing automaton made in 1770 by Wolfgang von Kempelen that toured Europe, and impressed statesmen like Napoleon Bonaparte and Benjamin Franklin. It was later revealed that a human chess master was hidden in the cabinet beneath the board, controlling the movements of a humanoid dummy, which explained its expertise.

Amazon's founder, uses the term 'artificial artificial intelligence' for the outsourcing of parts of a computer program to humans (Stephens 2023). This approach has been criticized for treating people as "software components" with "a sense of magic, as if you can just pluck results out of the cloud at an incredibly low cost" (Lanier 2013, 169).

## 6 Everyday Companions

The final category in this Monster Manual of the megadungeon encompasses commonplace digital entities with limited autonomy, which I name 'everyday companions'. Forming a less coherent cluster, these entities illustrate the plurality of digital cultures, reflecting the varied ways in which we live, communicate, work and play.

These everyday companions include rudimentary conversational agents,<sup>19</sup> such as ELIZA, the infamous computer program that simulated a psychologist (Weizenbaum 1966), paving the way for what was later named the 'chatterbot' (Hale, Scanlon 1999), now known as the 'chatbot'. Among the vast number of systems of this type, the best-known include Bob, Clippy, Cortana (Microsoft), and Siri (Apple), all included in the operating systems and software running on our computers and smartphones. Without necessarily having the same conversational character, this category also includes search engines. The most frequently personified of these is Google Search, often referred to simply as 'Google' ('Did you ask Google?', 'Google told me that...'), as if it were an oracle providing counsel. Query platforms such as Ask.com have also played on this anthropomorphism, since its name was previously 'Ask Jeeves', named after a butler from the stories of the English writer P.G. Wodehouse.

A second subset of everyday companions are the various digital entities of the video game world. First are 'avatars', visual representations of the user or a character they control on a digital platform. Such representations are usually visual, encompassing two-dimensional icons or profile pictures, as used in internet forums and other online communities, and the three-dimensional models and bodies used in virtual worlds. An avatar can also just be a written description, as in text-based adventures such as MUDs. The idiom itself originates from the Sanskrit term *avatāra*, which stands for the 'descent' of a deity into a terrestrial form. First adopted by science fiction writers, it was then used for the on-screen representation of the user in

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<sup>19</sup> The term 'rudimentary' here refers to the techniques for simulating the production and processing of 'natural languages' used by programs such as ELIZA, which use pattern matching and substitution of regular expressions, giving users the illusion that it could understand the meaning of the conversation.

Richard Garriott's 1985 computer game *Ultima IV: Quest of the Avatar*, "signaling the potential for computing to offer a mystical or enchanted perspective within an otherwise secular world" (de Wildt et al. 2020).

Staying in the world of video games, our category of 'everyday companions' also includes NPCs, namely, those characters not controlled by a player. Originating in traditional tabletop role-playing games, where the term denoted people and creatures controlled by the Game Master rather than by human players, procedural programming techniques have rendered video game NPCs increasingly complex, capable of elaborate simulated behavior.<sup>20</sup> A further sub-category of these characters has appeared in the past decade: geolocated NPCs, such as Pokémon GO's monsters, enabled by the spread of mobile devices and their locative capabilities. This technical possibility makes it possible to give these digital entities a hybrid existence, spanning software and the everyday environment.

A third subset of everyday companions concerns those entities derived from cultural practices documented in digital folklore (de Setta 2019). Consider the troll, characterized in the Jargon File<sup>21</sup> as an

individual who [...] regularly posts specious arguments, flames or personal attacks to a newsgroup, discussion list, or in email for no other purpose than to annoy someone or disrupt a discussion.

A definition that has expanded to social media and other online platforms. Think also of the abundance of internet meme characters found on social media, proliferating cultural figures replicated and modified by users. Within this subset, alongside depictions of people (e.g. Trollface, Leeroy Jenkins, Wojak) and animals (LOLcats, Nyan Cat),<sup>22</sup> one can also find more obscure figures, such as 'creepypasta', with characters like Suicidemouse or Slenderman circulating as internet-native urban legends, rumors, or horror stories, "passed around on forums and other sites to disturb and frighten readers".<sup>23</sup>

Strangetales, unverified rumors, shaggy dog stories, folk art, hoaxes and provocations are an integral part of the vernacular web

<sup>20</sup> The idea of the NPCs also became an internet meme, a label for people who do not think for themselves or do not make their own decisions. One canonical example of Wojak (also known as NPC Wojak) with his grey, expressionless face. Since Wojak is just a static image circulated and modified by human users, he is not in the 'emergent beings' category of the Monster map, but is, for many internet users, another familiar 'everyday companion'.

<sup>21</sup> <http://www.catb.org/jargon/html/T/troll.html>.

<sup>22</sup> Internet meme characters are well documented on the Know Your Meme platform: <https://knowyourmeme.com/categories/person>.

<sup>23</sup> A good compendium of creepypasta and their characters can be found on the internet subculture platform called Fandom: [https://creepypasta.fandom.com/wiki/Creepypasta\\_Wiki:What\\_Is\\_Creepypasta%3F](https://creepypasta.fandom.com/wiki/Creepypasta_Wiki:What_Is_Creepypasta%3F).

culture that emerged in the final decades of the twentieth century (Lialina, Espenschied 2009). In a sense, they also correspond with the hacker practices described by anthropologist Gabriela Coleman (2013), which were transformed with the spread of internet use. Hacking practices also feature lesser-known but equally important entities in our bestiary. This is the case, for example, with the Trojan horses: named after the ancient Greek story of the deceptive wooden animal that led to the fall of Troy, the term refers to a malicious computer program that tricks users into running it, granting a third-party unauthorized access to the affected computer. Unlike viruses, Trojans have less autonomous agency, being unable to propagate themselves in machines and computer networks.

## 7 Reflecting on the Monster Manual

Described succinctly here, the entities compiled in this paper are an essential part of digital folklore, in the ‘new digital volumetries’ that Berti and his colleagues propose as a way of grasping the dense, multi-faceted environment of the Megadungeon. Listing and describing these creatures as they might appear in a Monster Manual allows us to grasp the plurality of beings we interact with in our digital devices and online worlds. Taken alongside the descriptive elements, the map in figure 1 enables us to draw broader conclusions about the anthropological issues at stake.

An initial observation addresses the diverse origins and antecedents from which these entities derive their identity. Their names and behaviors track a range of sources and inspirations: animals (viruses, bugs, worms), creatures from Celtic or Scandinavian mythology (trolls, bards), ancient mythology (centaurs, daemons, trojan horses), or from beyond the Western world (avatars). For others, however, it may be a background linked to more recent conceptions, such as scientific terminology, or the acronyms typical of contemporary R&D (LLM, ChatGPT, HFT algos), references to characters from popular culture (Watson, Ask Jeeves), or portmanteaus (LOLcats, creepypasta). Whatever their origins, the aggregation of these entities in the monster map on figure 1 highlights the cultural syncretism at work in digital culture. This is also a merit of the Monster Manual metaphor, which, as in the case of *D&D*, constitutes a bestiary of bestiaries, compiled from a variety of sources (Peterson 2012). The Monster Manual blends a multitude of creatures from distinct cultural backgrounds, present in the composite environment that is the digital megadungeon.<sup>24</sup>

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<sup>24</sup> This survey focuses on material and entities from the Western world, and it would be exciting to further extend this compilation, widening the spectrum to encompass

The second observation of this compilation is that users' interactions with these entities are also multiple, comprising a vast repertoire of communications, influences and interdependencies. People may, for example, use or exploit these entities, by delegating tasks to them (the digital janitors). They may be perceived as a threat to be combatted or controlled (virus, trojan horse). Users may converse with these entities in general or specific ways, hoping to find information (Google Search). Users may test their limits through experimental insults (chatbots), hit on them (virtual girlfriends), play or have fun with them (cellular automata, NPCs), laugh about them (internet meme characters), observe their development and mourn their disappearance (Artificial Life, Sims-style NPCs). While the spectrum of relationships is broad, it does not cover the immense range of human relationships either. Furthermore, the vast majority of these relationships are based on a particular relationship with time. The entities described in these pages are not necessarily stable: LLMs and chatbots evolve as a result of changes in technology and the data that supports them, simulated abstract entities mutate, bugs appear and disappear, NPCs die, and others are revealed by video game producers, creepypasta rumors come and go.

A third, cross-cutting observation also emerges from this compilation: while I have presented these creatures individually, reflecting on their varying degrees of autonomy, they do not behave or operate independently. The social life of these entities does not only concern their interactions with users of software and online platforms. Some of these creatures interact, exchange or rely on others. For example, LLMs ('abstract entities') are necessary for the operation of conversational agents such as ChatGPT or Bard ('emergent beings'). Similarly, 'digital janitors', controlled by humans or programs, are vital for the infrastructure and operations they support. Troll activity ('everyday companions') can shape chatbots behavior, as we have seen in the cases of Tay and Xiaoice. The evolutionary mechanisms present in abstract entities such as cellular automata, Boids or Karl Sims' evolving creatures have also informed the behavior of NPCs and their avatars. Faults, errors and incidents encountered by users interacting with these creatures may become the subject of stories and rumors represented by the strange figures of creepypasta or internet memes. Lastly, relations between entities can be antagonistic and conflictual, as in the fight against bugs, viruses and worms, undertaken by digital janitors or more complex entities (e.g. multi-agent simulations).

Looking to the future, these digital beings increasingly exist beyond the virtual worlds and software embedded in our machines.

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other cultural universes and world languages.

Initially limited to the desktop computers of the home or workplace, the advent of mobile and ubiquitous computing technologies is introducing new contexts, including all kinds of everyday places. Geolocation, augmented reality, and the digitization of everyday objects means that smartphones and other devices are becoming an interface for accessing new digital creatures in the world around us, as in the case of pervasive games such as Pokémon GO. While this example is but a minor part of the Monster Manual presented here, it is nonetheless a suggestive signal, heralding the return of marvelous entities to our everyday physical environment, after several decades circulating within our machinic, digital megadungeon.

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# Year of the Goblin

## Tracing New Developments of Digital Folklore and Urban Modes of Living in Online Music Subcultures

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**Abstract** This paper sheds light on the connections between musical undergrounds and the global emergence of ‘goblin mode’ as a political aesthetic. In March 2022 *The Guardian* published an article discussing the popularity of a new locution emerging on social media: ‘goblin mode’. Characterized by a “complete lack of aesthetic” and vaguely pointing towards “the opposite of trying to better oneself”, ‘goblin mode’ was linked to embracing dishevelment, rejecting societal expectations, and giving in to the heavy consumption of junk food and digital content in reaction to the pandemic obsession for domestic and personal improvement.

**Keywords** Underground. Digital folklore. Bestiaries. Aesthetics. Class. Digital infrastructures. Urban studies. Music. Ethnomusicology.

**Summary** 1 Introduction. – 2 Dungeon Crawlers and Dwellers: New Musical Imaginations and the Underground as a Megadungeon. – 3 The Dungeon on Tape and on the Dancefloor: A Map of Medieval and RPG Aesthetics from Dungeon Synth to Larping Partygoers. – 4 Messy, Feral, Mischievous: The Goblin from Folk Literature to Popular Culture. – 5 Low Level, Low Class: ‘Goblin Mode’ and Predicting the Future from the Megadungeon’s Peripheries. – 6 Conclusions: Life out of the Megadungeon.



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Goblins don't need to justify their cruel acts.  
They're evil creatures.  
(Grandpa Seth, *Troll 2*)

Move over trolls, it's goblin time!  
(Charles Rushforth on *Junkee*)

## 1 Introduction

It is 2018. After almost ten hours of drudgery in front of my computer screen at the office where I am working, I pick up my phone and hit up a friend of mine. "Hey, what are you doing?", he answers right away: "Yo, we're in the dungeon, the usual. Come if you like". After another thirty minutes or so I move through the city and reach my friends' flat; a living space at the centre of Milan occupied by underground musicians and producers Reptilian Expo, Kakofonico and Señor Service.

Passing the unlocked door, I enter the dim lit windows-almost-shut four rooms, cavernous apartment, and hear music coming from my friends' bedroom. A voice yells at me as an echolocator device for lazy people. I enter the room: a small space with a mezzanine bed, a tiny desk underneath it and multiple shelves covering the only free wall available. The haze of pot smoke fills the air like thick mist. Tapes, instruments, books, zines, posters and other weird objects are amassed with different degrees of order around the area: a treasure room for music nerds. Señor Service is crouching in front of the desk producing new tracks, switching once in a while to Internet binging and hyperlink-hopping; his face illuminated only by the cyanotic blue-lights of the screen and a cheap table lamp. He stops the music through the keyboard's spacebar and greets me. Reptilian Expo finally enters the room as well. "What have you guys been doing?" I ask. "Nothing much really. Mainly playing music here. *Classic dungeon crawling as usual*", they answer. We move to Kakofonico's room. He is not here and his bedroom offers more space for us to hangout. In the five meters walk I notice the domestic disorder; objects that are not where they are supposed to be, unwashed dishes, weeks-old trash bags, empty pesto sauce cans collected in a corner and overflowing ashtrays. "Sorry, it's a mess", they remark; "*Goblin style*", I add sneering.

This anecdote narrating an absolutely unremarkable, ordinary snapshot of the urban life me and my circle of underground musicians were leading five years ago shows how we were employing the fantasy and role-playing game (RPG) imagery of goblins and dungeons to describe our modes of living in the city. A time in which we would leave only to meet in other shadowy, untidy apartments or dungeon-like, labyrinthine social spaces such as the defunct Macao squat or the Via Tucidide studios. Consequently, we built on the inside joke

that we were all a bunch of dungeon crawlers and dwellers moving across the urban landscape. This employment of humour to develop a personal vocabulary describing metropolitan behaviour generated citations in musical works like Reptilian Expo's album *xperiameta-phone* (2019) and TMT's track "La Stanza" (2022), and even albums' concepts dedicated to this terminology such as Kuthi Jin's EP *Crawl & Dwell* (2020) [fig. 1].



Figure 1  
Cover artwork of Kuthi Jin's *Crawl & Dwell*

Little did we know that in two years from the genesis of this vernacular vocabulary for underground music slackers, the goblin imagery would become a global trend when in 2022, right after the perceived end of the global COVID-19 pandemic, Internet users would choose 'goblin mode' as new Oxford word of the year (James 2022). The term, referring to "unapologetically self-indulgent, lazy, slovenly, or greedy" behavior and characterized by a "complete lack of aesthetic", vaguely pointing towards "the opposite of trying to better oneself" (Knight 2022), was associated to embracing dishevelment, rejecting societal expectations, and giving in to the heavy consumption of junk food and digital content in reaction to the early pandemic obsession for domestic and personal improvement.

As my anecdotal introduction clearly shows, this lifestyle describes how a certain circuit of underground musicians used to live years before the pandemic hit: hustling between low-wage yet demanding jobs, small bedrooms-studios in expensive dungeon-like metropolises, and free time spent bingeing online content. What I think is crucial in something that may otherwise seem a silly statement on how musicians often live in self-inflicted neglected conditions, is that if read through sociologist Jacques Attali's theories on music's political economy (1985), this context sheds light on why and how the endless layered structures of the Internet as a megadungeon are evolving. In this essay I will show that fantasy imagery has evolved for many underground musicians in varied and heterodox ways to communicate a perception of urban precarity and a corresponding necessity of emancipatory escapism through the convoluted, procedurally

generated structure of the Internet, which develop alongside lines of class, anticipating larger social shifts.

I will first illustrate what the goblin and dungeon imagery meant to my circle of artists through ethnographic and auto-ethnographic data. Subsequently I'll delineate how fantasy tropes link underground music to the megadungeon as a topological model. Then, I will reconnect this analysis with its larger implications to mass culture through analysing the trend and spread of 'goblin mode' while also offering an archeology of the goblin's folklore in popular culture and the Internet. After these two steps, which help us understand how such fantastic creatures relate with individuals' feelings of capitalist, metropolitan oppression and need for creativity through the Internet, I will finally use Attali's theories from his book *Noise: The Political Economy of Music* to explain how the goblin's political aesthetic is generally relevant to a world of increasing domestic confinement and internet consumption.

## 2 **Dungeon Crawlers and Dwellers: New Musical Imaginations and the Underground as a Megadungeon**

The terms 'dungeon crawler' and 'dungeon dweller' originate from the classic RPG terminology. The first indicates a gaming scenario defined by

Running through labyrinthine enclosed environments, defeating creatures, collecting up objects and money, solving puzzles, and unlocking doors. (Stuart 2021)

This happens in a specific enclosed space - the dungeon - provided with multiple ways of access and navigation (Broadhurst 2014). Respectively, the second term refers to the types of creatures that populate the dungeons such as goblins. The appeal of these games, *Gauntlet* and *Diablo* being perhaps the most famous examples, is their capacity to become flexible realms of the imagination, offering a narrative background and creative context providing distraction, amusement, hang with friends. For some, this hobby can even build character or teach good behavior becoming even a belief system, philosophy or, like sports or the military, a life structure (Gilsdorf 2009).

I employed and popularized such a terminology first when I found those semantics apt to describe how some of my friends never left their messy flats, accumulating musical paraphernalia; with the right amount of domestic neglect. This carelessness in fact allowed everyone to enjoy these flats as perfect spaces to explore sociality without constraining forms of domestic etiquette, thus making these places appealing hangout spots. My circle of underground musicians picked

up on these terms promptly. As producer Señor Service comments regarding the terms *dungeon crawlers* and *dwellers*:

We were trying to describe the context in which we lived and that had a certain... dark aspect to it. One of people who don't leave their homes very much and live in murky flats. Of course it made sense also with the 'dungeon' terminology given that our flat really resembled a *dungeon*. It was very dark, and goblins need darkness. We certainly resembled somewhat a bunch of goblins. It perfectly described our condition of human beings living in Milan. (WhatsApp message to Monteanni, 11 July 2023)

This kind of fantasy metaphor was informed by a shared childhood developed around activities concerning genre-specific media such as fantasy literature and movies, card games, video games and RPGs. As fellow musician and flatmate Reptilian Expo remarks:

I think that all of us were fascinated by this fantasy world. I was playing *Magic*,<sup>1</sup> but it could have been video games like *World of Warcraft* or *Dungeons & Dragons*.<sup>2</sup> For others it might have been *Harry Potter* or *The Lord of the Rings*. So when we moved to Milan, while living in cramped spaces, we realized how similar the people around us were to those creatures; everything clicked! And then the crawling and dwelling: being always trapped inside these smoky, stinky four walls. There was also a mobility element to it, like moving inside-outside of our *dungeons* to other *dungeons*. So, all in all, from this aesthetic of a magic and *dungeon*-like world with which we grew, it was natural for us to see the similarities in what we were experiencing; especially from the perspective of *cunicular spaces* and *goblin-like faces*. (WhatsApp message to Monteanni, 11 July 2023)

Even more fascinating is how the exploitation of a fantasy lexicon is not only functional to this joke for insiders but can be connected to larger influences adopted in other contexts of popular culture and living conditions that emerged during the Covid pandemic. In this respect electronic music producer Xàr Num's comments are enlightening:

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<sup>1</sup> *Magic: The Gathering* is a well-known and notoriously difficult trading card game about magical combat (Churchill, Biderman, Herrick 2019).

<sup>2</sup> *Dungeons and Dragons* (*D&D* from now on) is a fantasy role-playing game first published in 1974 and nowadays the most popular among the genre.



Figures 2a-b Artwork of *Clorofellas* cassette album

For me this slang is related to larger trends regarding an emerging 'technologic middle-age', where the most surreal and grotesque extremities of our society in various artistic practices take the connotations of the characters that, in that imagery, are grotesque and surreal, like goblins and the like. I don't see this semantics as really relevant to me outside of a certain joke, though. I'm sure that for the other projects this terminology stratifies differently, although I also think that in those conceptual stratifications the fantasy imagery is just a starting point. On the other hand, the crawlers and dwellers terminology described perfectly our social groups' [mobility] dynamics. Something which during and right after the Covid lockdown we all experienced: alternating between hermit-like isolation and pure nomadism; explorations of external social ambiances and socially mixed gatherings. (Telegram message to Monteanni, 11 July 2023)

Indeed, even musicians that were linked to our circle but did not share our same social spaces and, hence, our slang, were influenced by the dungeon imagery. An example is *Clorofellas*: an Italian goblin-themed pop rap album published in 2022 by artist WOZZA [figs 2a-b]. When asked by rapper TMT about why he chose such imagery, WOZZA answered simply: "Because I live like a goblin", referring to him not having a bank account and surviving only on cash money, earning just enough to stay afloat until the next gig.

A second example emerges from an interview I made with bass music producer talpah, who had previously released an album, *HOW DID I SURVIVE?* (2021), on Kuthi Jin's label CLAM:

When I produce I am interested in communicating a narrative. Lately I think of my productions as a kind of ‘dungeon music,’ the feeling of walking through a dungeon where around every corner there might be a monster. (Monteanni 2023a)

Talpah perceives this ‘dungeon feeling’ as something that can be replicated by creating a narrative through the exposure to heterogeneous selections of obscure Internet content dug from the depths of streaming platforms such as YouTube. This is what he had to say regarding an audio-visual show he prepared with video maker and graphic designer Nic Paranoia:

I’d like people to listen to my music as they watch random videos we dug from YouTube to create a narrative: that dungeon music effect I’m looking for. (Monteanni 2023a)

A second intriguing point is how this dungeon imagination is connected by talpah to feelings of distress and anxiety in video games, where certain sinister happenings caused by technological malfunctions are represented as rooms of the RPG stone prison:

One of the tracks from my upcoming album will probably be called “The Red Screen of Death”. Do you know about it? It is when back in the days of PS2 [PlayStation 2] the screen turned to red with an ominous sound and your console seemed completely fucked. Many people on the Internet still have a strong memory of that jarring happening from when they were kids; the sensation of ending up in this room where all was doomed. Many recount how they still fall into distress when they hear that sound. Well, I’d like to recreate that feeling in relation to this dungeon-music effect. (Personal communication)

The dungeon is revisited as a technological, virtual structure joined with the practice of digging for obscure Internet content.

Even if based on the RPG imagery, all the conversations I present conjure a much more stratified and complex definition of what a dungeon can be. While Señor Service, Reptilian Expo, WOZZA and Xàr Num link this type of fantastic, middle-age themed imagination to modes of urban living at the margins of civil society, feelings that were only strengthened by the experience of the pandemic, talpah’s testimony connects musical aesthetics of the digital underground – music that “is born on the Internet, thanks to the Internet” (Monteanni 2023a) – to technological vernacular practices and their narratives. These include, in talpah’s case, unearthing obscure audiovisual content and visualizing technological malfunctions as spaces, like we have seen in the case of the ‘red screen of death’.

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I argue that these commentaries outline a conception of the genre's ethos and aesthetics that parallels the structures and functions of a megadungeon, thus reinforcing the affinities between these two imaginaries. In order to prove this, first, it is useful to review the story of the underground as a concept to show how the Internet has managed to partly sustain and nurture underground music practices and thus why underground musicians living in precarious conditions are increasingly on the Internet. Thereafter, I will consider the structure and rules of the megadungeon to prove how fantasy tropes related to space and depth are a relevant model to interpret one's own experience as an underground musician living in precarious life conditions.

Theories of the underground are many and varied, representing today one of the most difficult genres to define (Monteanni, Pennessi 2022). Following Frank Zappa's seminal principle that "the mainstream comes to you, but you have to go to the underground" (quoted in Graham 2010), journalists and cultural theorists have tried to pin down a possible definition of the concept guided by ethical undertones, in order to discuss whether the term underground has lost its meaning or can still be employed as a political stance.

According to David Keenan, an author and prominent figure in the US-British scene, underground is a universe that officially came into being around the early 1990s, as an outgrowth of prior musical experiences such as Sonic Youth. Those were the years of enormous 'Do-It-Yourself' (or DIY) fervor (Keenan 2015). Critic Simon Reynolds, for one, observes how, from the late 1960s to the early 1970s, in underground prodromes, a form of equivalency or parallelism might be drawn between music and an organization with a political stance (e-mail to Monteanni, 10 December 2021).

In 2015, Keenan claimed that after more than four decades, the pseudo-movement embodied by the post-1968 cultural expansion was no longer a symbol of the subculture's DIY attitude and counter-cultural isolationism. Ultimately, what was a matter of attitude had become a matter of style, jeopardizing the subculture's purity. Simultaneously, Reynolds weighed in, claiming that the web "has extinguished the idea of a true underground; now it is too easy for anyone to discover anything" (e-mail to Monteanni, 10 December 2021).

But according to my personal experience in what I termed the digital underground following talpah's definition (Monteanni 2023b), I think that the underground is still alive on the Internet and agree with Stephen Graham (2010), who pointed out how more recently the independence afforded by the Web's endless promotional, creative and circulatory affordances have nurtured new underground circles and practices. The potentialities of the Internet alongside the democratization (Clayton 2016) and hijacking (Novak 2013) of mass-distributed, affordable consumer technologies nudged amateurs and

underground musicians to employ semi-professional and professional music production tools constituting valid alternatives to otherwise expensive, cumbersome, and esoteric technologies. Moreover, free streaming websites like Bandcamp and SoundCloud, along with non-musical, digital platforms such as Linktree, YouTube, Discord, WordPress and social networks, provided musicians with virtual stages to not only promote and sell their productions more or less directly to the public, but also to discover, exchange and collaborate with kindred artists transnationally (Monteanni, Pennesi 2022). With these tools musicians are ultimately crafting their sounds in new economically and logistically convenient ways, building scenes in the meantime; all without necessarily leaving their bedrooms (Lysloff 2003). This new, digital underground ties with precarity and the Internet's affordances in two ways: first, as musical scenes born out of the lack of performance and rehearsal spaces – a no-venue underground (de Seta 2016) – and, second, as a constellation of online, often short-lived microgenres shaped by patterns of consumption and production of Internet content (Press-Reynolds 2022).

On the one hand, as I have shown elsewhere (Monteanni, Pennesi 2022), many underground musicians' overall preference for new digital media and technology is influenced by hostile cultural and municipal policies that make it increasingly difficult for artists to access physical places. The dramatic and ongoing rise in city centres rents following the global real estate crisis (Masterson 2022), the continuous decline in revenue of independent clubs and live venues (Savage 2022), the closure and criminalization of many autonomous zones and squats (Dowling 2009), the drastic cuts to arts and culture fundings (Morrow 2022), as well as the decline in music sales and the rise of the streaming industry (IFPI 2022) contributed to the marginalisation of underground musicians. To compensate for these obstacles, artists turn increasingly to virtual, decentralized environments.

This already resonates with how RPGs are organised in virtual spaces since their invention [fig. 3]. To consider the first instance of such a structure, Multi-User Dungeon or MUD was written by Roy Trubshaw in the fall of 1978 at the University of Essex (Bartle 1990). A MUD or MOO is a text-based computer programme allowing numerous subjects to create fictional characters and navigate through a virtual internet 'place'; environments with a fantasy adventure background facilitating characters to become more powerful through virtual conflicts (Punday 2000). Specifically, online musical communities are more akin to an iteration of the program developed in 1989 by Jim Aspnes at Carnegie Mellon University and named TinyMUD (Hamurcu 2022). TinyMUD was innovative in that it focused less on combat and more on user cooperation and social, decentralised interaction through the internet (Stewart 2000). Although the social sphere and identities MUDs produced were frequently described

in exaggerated, idealistic terms as ways through which the world would have found new, more egalitarian and positive way to associate with others, many have highlighted instances in which cyberspace seemed to promise to fundamentally reconfigure the underlying parameters of human connection (Punday 2000); something that musicians from the digital underground seem to have felt compelled to experiment with.



**Figure 3**  
Underground music festival Musa Ullakolla organized by KRAAK records and hosted on SWGBO: a cracked version of Finnish social media platform Habbo Hotel

Music genres are caverns with layers upon layers of sediment, fossils, reservoirs, eroded surfaces. Shiny rocks that dazzle the eye, icicles hanging from the ceiling with curled ends. Folds and crevices that bleed into other caverns connected by interstitial tunnels and dark streams. They're spatial and temporal - networks of musicians and aesthetic contexts that have emerged over time, some of them forming in response to media that came before them. It's practically impossible to grasp a music genre or scene in its totality, aware of every manifestation and influence, but you can dig deep in the ground and turn over as many rocks as possible. What playlists do is rub sandpaper over a music scene so there's no dimensionality left. (Press-Reynolds 2022)

If the neoliberal evolution of urban spaces pushed musicians to socialize into dungeon-like virtual spaces, on the one hand, the proliferation of '-wave', '-core', and '-punk' aesthetics has since the 2010s generated new online-based underground genres and publics such as vaporwave, seapunk and glitchcore, reflecting peculiar niche aesthetic and a group of paratextual references bearing different political and apolitical meanings (March 2022). Influenced by the Internet's capability of increasing the complexity and influence of niche market consumer networks (Broman, Söderlindh 2009, 6), the phenomenon of online microgenres has intensified and saturated on platforms such as SoundCloud thanks to the Internet as a decentralizing



Uniting this description with talpah's conceptions of virtual place, I argue that the already noticeable spatial connotations of the underground – something that is beneath the ground and must be dug and unearthed – have increased with the use of the Internet by the contemporary digital underground. When talking about the actors of the digital underground, the relation between Internet's labyrinthine spatiality and self-neglect become more evident when we consider the famous 'iceberg chart'. Iceberg charts have been used by Internet communities since 2011 (Spool 2016) to illustrate levels of knowledge of a given topic. In the chart the tip represents generic knowledge, whilst the submerged part represents the sum of esoteric knowledge about a specific issue. Considering the graph [fig. 4], depicting the expertise of musical works, besides the idea of spatiality and depth, what's definitely intriguing is that, such as in my friends' experience with the dungeon terminology, increased knowledge of underground music entails a condition of proportional self-neglect. A concept that parallels the design of megadungeon in that "the deeper you go, the more dangerous it is and the greater the rewards" (Broadhurst 2014).

Spatial metaphors akin to the megadungeon model and characterizing the idea of an underground become quite literal when one thinks of it in its Internet developments for contemporary musicians: artists occupying small, dungeonesque houses that they inhabit as subterranean creatures, create scenes dwelling a transnationally connected, multilayered environments made of hyperlinks, platforms and servers as secret doors, portals and procedurally generated spaces (van der Linden, Lopes, Bidarra 2014) where to find deeply buried musical treasures and spawn new musical breeds.

At the same time, some literature hints at how there is a more developed relationship between live action role-playing<sup>3</sup> (LARPing from now on) late capitalism working cultures and the Internet's megadungeon. In a post entry on his *Interconnected* blog, Matt Webb (2022) has explained how fantasy goblin impressions in his teenage years reminded him of the LARPing occurring on LinkedIn and in offices, where people impersonate office characters and embody imagined professional personalities, often doing so through e-mails and social platforms on the Internet infrastructure. Following this lead and building on this idea and the previous Xàr Num interview, let's now consider the influences fantasy tropes had on contemporary music subcultures in order to show why the imaginary of the goblin has spread in the underground first, and only subsequently in mainstream global culture.

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**3** A sort of interactive role-playing game in which participants physically portray characters, often in costume and with props.

For the next section, besides relevant literature of the feudalization of society and references to a new middle-age, explaining the impact of fantasy and medieval tropes on society as a whole, I have considered recent investigations regarding how these new metaphors have reached and shaped subcultural productions and practices in fringe musical social movements, releases and events. The two different categories of the selected scenes, participants and case studies, namely RPG-themed club music and dungeon synth, have been chosen on the basis of both their widespread popularity in underground music circles and their relationship with digital means of production, circulation and participation which permitted said notoriety. Whereas the analysis of dance music with RPG aesthetics provides background information concerning the reasons behind the appropriation of the fantasy imagery by today's scene actors, the examination of the origin and developments of dungeon synth since the nineties, likely the first underground music genre inspired by fantasy artistic and literary products, will show how the employment of fantasy imagination in underground music has evolved, for some musicians, from an apolitical expression of escapism to a way of narrating the desolation of living in a world defined by violence and class disparities. Last, since the presented sources focus on European and Western-centred participants, the section only claims exhaustivity relatively to its obvious geographic limitations.

### **3 The Dungeon on Tape and on the Dancefloor: A Map of Medieval and RPG Aesthetics from Dungeon Synth to Larping Partygoers**

Xàr Num had remarked that influences of medieval and fantasy imagery are a trend at large in society and not only in the musical ecosystem. Proof of this can be found in what has been termed as the 're-feudalisation' of the economy and politics, redubbed as digital feudalism (Arditi 2023), or as the description of late capitalism as a new dark age (Bridle 2018): a clear reference to the middle-ages as an obscurantist period of history. Talking of music in particular, journalist Günseli Yalcinkaya explained how several post-pandemic dance music parties and raves in Europe are explicitly, heavily loaded with fantasy and pagan signifiers, hosting a crowd of "ravers dressed as medieval forest dwellers" (2021) and even providing their own versions of rituals through the preparation of potions or the reading of tarots or LARPing club nights combining virtual and physical domains (Yalcinkaya 2022). These acts are an attempt at mixing "queer nerd culture and RPGs with epic sounds inspired by fantasy and folklore" (Yalcinkaya 2021) through the layered sensory overload necessary for post-Internet attention spans (Yalcinkaya 2022); a phenomenon



Figure 5 Cover artwork of DJ David Goblin's *Orz Muzik*

to which in different measures artists such as DJ David Goblin [fig. 5], CL Golem and the collective NeuroDungeon can be ascribed [fig. 6].

Of course, Neo-pagan and techno-pagan themes have been part of popular culture for decades, bringing writer Erik Davis (2015) to theorize that technology has the potential to bridge the gap between rationality and imagination. Following this premise, Yalcinkaya claims that the new rebirth of fantasy influence is founded online, via social networks such as TikTok, which use increased during the pandemic. However, the prevalence of medieval aesthetics implies a deeper pessimism about the future, implying that historical progress has stagnated and that we are now retreating to earlier, darker patterns of society. Consequently, this resurgence in electronic music suggest a communal yearning to create emancipatory fantasies through the medium of rave music letting go of the growing economic insecurity, social atomisation and the erosion of community and identities (Yalcinkaya 2021). In practice, these music fantasies aim at creating alternative realities in which it is possible to control one's narrative, reclaiming spaces individuals feel shut off from, thus echoing the theory of anthropologist David Graeber claimed in his book *The Utopia of Rules* (2015) that the present popularity of fantasy may be



Figure 6  
Flyer of a NeuroDungeon  
Party

a reflection of a desire for a world free of state control, or, tellingly, feminist readings and employments of the goblin as a queer or provocative icon (Pitcher 2019; Higgins 1993).

But in spite of the large influence of the dungeon imagery on nowadays' dancefloors, the most iconic example of these explorations of gloomy castles and distant epic lands still remains dungeon synth (DS from now on). DS is a kind of fantasy-born and medieval-influenced electronic music that through the usage of synthesizers, keyboards, and drum machines ranges from sparse, lo-fi solo performances on electronic keyboards to complex, hi-fi orchestral works.<sup>4</sup> The style is part of the spectrum of black metal and ambient music: Hvard 'Mortiis' Ellesen, former Emperor member, a pioneer of the genre, although opposing the term DS (Kallio 2021, 9), which emerged from a post entry by Andrew Werdna on his *Dungeon Synth* blog (2011), credits Klaus Schulze, Tangerine Dream, and Kraftwerk as influences on the style. Furthermore, obvious paratextual influences are the

<sup>4</sup> Rate Your Music, *Dungeon Synth*. <https://rateyourmusic.com/genre/dungeon-synth/>; Newsome 2017.

works of J.R.R. Tolkien, Scandinavian nature and mythology and wizardry (Kallio 2021).

Despite being music which, since the early nineties, has been released almost exclusively in tape format, DS has recently resurfaced in the digital realm with renewed force thanks to the reach of platforms such as YouTube and Bandcamp (Kallio 2021). Beyond the technicalities of the genre and its rise to popularity, similarly to the fantasy media we have seen so far, what captivates DS fans and artists, often self-perceived outcasts, are surely its escapist qualities. “It’s a hideout. It’s a deeply reclusive and often sad genre, Dungeon synth means you’re kind of a freak,” commented DS artist Dunkelbot in an interview with journalist Miloš Hroch (2020).

After its resurgence, similarly to what happened after vaporwave, the style has fractured in many, additional subgenres each targeting a peculiar sonic aesthetic and theme like ‘dungeon noise’, ‘dino synth’ or ‘goblin synth’ (Hroch 2020). In some cases, DS even mixed with apparently distant genres like in the case of ‘keller synth’, defined by DS proboard user ‘windgeist’ as a sound created by artist B.S.o.D in Saarland (Germany), where the main difference to DS is the heavy usage of drum kit sounds and staggeringly really raw productions, or dungeon rap, a blend pioneered by artist DJ Armok (and other aliases) of Memphis rap<sup>5</sup> and DS (Wray 2023). These last two offshoots exacerbate the bleak undertones of escapism, respectively thematizing the abuse of drugs (Windgeist 2022) and the transnational feeling of depression and doom brought by political instability and war (Wray 2023).

While being still rooted in fantasy, then, the genre’s latest evolutions bring it back to the real world, sometimes taking into account political themes. But from this perspective it is particularly interesting to consider the work of DS Italian label Heimat Der Katastrophe, or HDK. Born out of the radical Milanese punk band Kalashnikov Collective, HDK has applied to DS their unique approach derived from years of punk and DIY militancy. For starters, in HDK the collective jokingly interprets anonymous employees of a namesake toy company, completely dedicated to the consumer, weaving a tongue-in-cheek narrative about games and capitalism (Perugini 2023). Even more cogently, in their release by Red Gremlin titled *The Rise of the Gazunderlings* (2021) [fig. 7] the revolution of goblins compelled to work in mines against their masters recalls the British miners’ strikes in 1984-85 (Perugini 2023).

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<sup>5</sup> A form of lo-fi atmospheric southern hip-hop popularized in the late 1980s and early 1990s by the likes of Three Six Mafia (Wray 2023).



Figure 7 Artwork of Red Gremlin's *The Rise of the Gazunderlings*

References to a revolutionary imagery become even starker when reading the liner notes on the album's Bandcamp entry:

In the darkest corner of the Sword Mountains, hidden in the shadow of the Icespire, lies the Kazunder Valley. Here, out of sight of prying eyes, the Faceless are overseeing the extraction of something far more precious than gold. No being in their right mind would ever set foot in these mines voluntarily and so the Faceless choose the cowardly creatures known only as the Gazunderlings to do their dirty work. <sup>6</sup>

Yet the terrors in the dark are so great that even the spineless Gazunderlings are forced to rise up against their masters.

<sup>6</sup> <https://heimatderkatastrophe.bandcamp.com/album/hdk-86-the-rise-of-the-gazunderlings>.

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RED GREMLIN, champion of the exploited, dungeon-synth artist in solidarity with the peoples in struggle, tells us about the tragic revolt of the Gazunderlings miners against their evil oppressors. Dedicated to the over-worked and under-paid hoi polloi of the world. 'Be patient my brothers and sisters, our time will come'.<sup>7</sup>

If the Red Gremlin is a clear metaphor of class struggle, looking back at RPG influences in dance music, interpretations of the goblin as a character using irreverence as a carnivalesque instrument to dismantle obstacles, power imbalances, and hierarchies by opening new liminal spaces where normal rules do not apply (Bakhtin 1984) emerge. In an interview I had with DJ David Goblin, he discusses why he chose the dungeon critter as his musical persona:

I associate Orks & Gobz with a form of constant movement, a devastating dynamic for which hard dance would be the perfect soundtrack to go to battle. [...] I didn't politicize my Musik by making it, but I do think that offering an escape from our harsh world, by creating another space, physically and mentally, is a political form in itself. [...] I've found in the irreverence and humor of the Gobz tools to make a truce with our world. [...] Like my latest release, one of the tracks is called "Karnaval". Without realizing it, I was playing on the carnival code: a kind of free space where many genres gather in numbers, superior to the powers that be, to turn the world upside down for the duration of the party. (E-mail to Monteanni, 8 August 2023)

Furthermore, in concert with *Rise of the Gazunderlings* rationale, when asked to comment on HDK's reading of the goblin as a working-class icon, DJ David Goblin reinforced this perception by underlining how goblins are inherently linked to power overthrow:

It's a common representation of the Goblins, for example I created the expression 'Govern Or Be Zero' for the acronym of my brand: GOBZ™, which symbolizes the fact that every Gobz is plotting a strategy deep in his cave to overthrow power. (E-mail interview with Monteanni, 21 August 2023)

Considering the examples I brought, by analyzing how the global underground has incorporated fantasy and RPG elements we can see

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<sup>7</sup> <https://heimatderkatastrophe.bandcamp.com/album/hdk-86-the-rise-of-the-gazunderlings>.

that alongside the need of escapism from a grim reality, artists have developed a unique audiovisual and paratextual language allowing to articulate one's position in late capitalism and respond to pressures in contexts of existential and social hardship. Circling back to our musicians stuck in dead-end jobs and economic instability, in HDK's worldbuilding this attitude culminates with the disenfranchised figure of the goblin: a lowly worker and possible lumpenproletariat of the dungeon populace. To clarify further the subterranean importance of the goblin for late capitalism's global imagination and how its development led to 'goblin mode', in the next section I'll reconstruct what role and meaning goblins occupy in contemporary culture and how their description has shifted significantly since their first appearance in folk tales and regional traditions. Such reconstruction will show how the imaginary of the goblin, dense with references to mischievousness, laziness, self-neglect, living in cramped, dark and subterranean places, was extraordinarily respondent to underground musicians' need to express and depict metaphorically their living conditions and practices both online and offline.

#### 4 **Messy, Feral, Mischievous: The Goblin from Folk Literature to Popular Culture**

Media theory has profusely analyzed the figure of the troll, which from a snarling creature of Norse mythology (Phillips 2015, 15) became the icon of provocateur users on the Internet employing harassment to build character, explore problematic practices without consequences and toy with boundaries of online etiquette (de Seta 2018). Yet, goblins remained ignored until 'goblin mode' exploded on the Internet. What is it of this dungeon creature that generated identification and symbolic, creative manipulation?

According to traditional European folklore, a goblin is a little, hideous, monstrous creature [fig. 8]. The term is colloquially employed to refer to all little, fay monsters, including imps, leprechauns, kobolds and all sorts of evil or mischievous spirits (Shaijan 2019, 7). *The Dictionary of Fairies* (Briggs 1976, 32-3) defines goblin as "evil and malicious spirits, usually small and grotesque in appearance," and a subterranean species afraid of sunlight (Schwedel 2022). First recorded in the fourteenth century and most likely derived from the unattested Anglo-Norman *gobelin* (CNRTL, s.d.) and Medieval Latin *gobelinus* (Du Cange 1678), it has been recently expanded to refer to similar beings from different cultures, such as the *pukwudgie*, *dokkaebi* (도깨비), or *ifrit* (Shaijan 2019, 8). Goblins' magical skills, temperaments, and appearances vary according to the country of origin, ranging from mischievous household spirits to vicious, bestial robbers (Gillian 1974).



**Figures 8a-b** Two depictions of the goblin. On the left, a drawing from nineteenth century's *English Fairy Tales*. On the right, an illustration from the *D&D's Monster Manual*

When it comes to the specific world of RPGs, the *D&D Monster Manual* defines goblins as:

small, black-hearted, selfish humanoid that lair in caves, abandoned mines, despoiled dungeons, and other dismal settings. Individually weak, goblins gather in large – sometimes overwhelming – numbers. They crave power and regularly abuse whatever authority they obtain. (Wizards R.P.G., Wizards of the Coast Inc. 2014, 165)

TV Tropes, a renown website documenting popular plot conventions and devices, adds a number of interesting specifics to this definition:

their lack of size and strength makes any evil act they may commit seem comical by default, and thus they tend to serve as the lowest rung of the Sorting Algorithm of Evil,<sup>8</sup> and are usually the first kind of Mook a budding adventurer will fight.

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<sup>8</sup> A narrative, taxonomical device according to which “Villains will appear in strictly ascending order by menace”. Tv Tropes, “Sorting Algorithm of Evil”. <https://tv-tropes.org/pmwiki/pmwiki.php/Main/SortingAlgorithmOfEvil>.

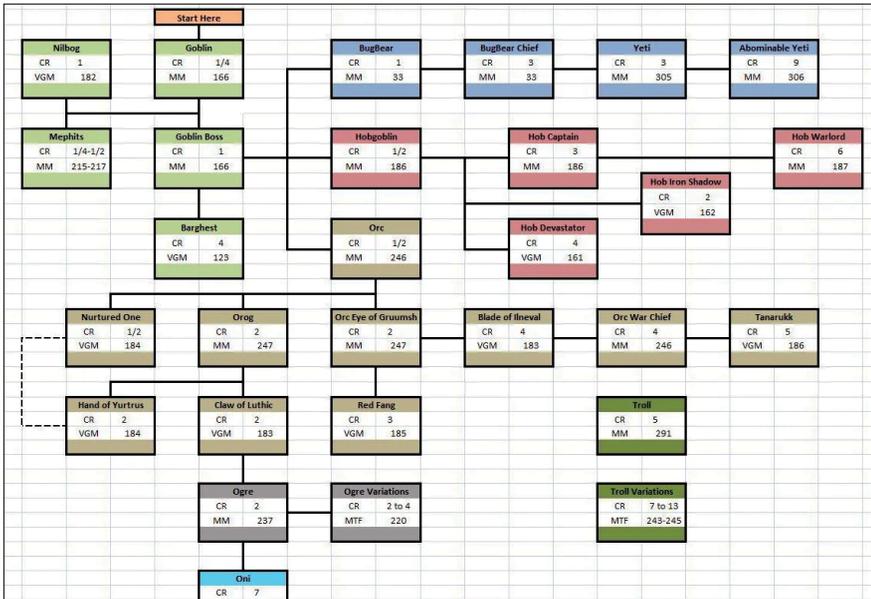


Figure 9 A taxonomy of goblins for D&D scenarios created by user 'TheUnregisteredNurse' on the r/DungeonMasters subreddit

Individually, goblins are overall mischievous, lazy and undisciplined, selfish and comically weak. According to the context in which they are imagined, they may or may not be related to other similar, goblinoid creatures such as hobgoblins, ogres, gremlins and orcs (Shaijan 2019), becoming a folk entity based on locale specifics (Manning 2014).

In spite of this, goblins' contemporary conception was majorly influenced by modern fantasy literature rather than folklore. Generally, *The Lord of the Rings* writer J.R.R. Tolkien is credited for introducing taxonomies of fantastic races, as well as introducing moral divisions between them: a logic for which in Tolkien's world goblins are evil and elves are good (Schwedel 2022). Interestingly, decades later these classifications have often been interpreted as racist transpositions of ethnic stereotypes stemming from a xenophobic, eurocentric perspective in which goblins were defined by the dominating race, i.e. humans (Ferguson 2023), thus bringing politicized aficionados, as part of an anti-anthropocentric rethinking of the fantasy genre and ecosystems, to reconsider them as equal races among the others rather than monsters. This is clear in the second edition of *D&D*, where these creatures become ethnic groupings rather than



Figures 10a-c Left to right, *Harry Potter's* head goblin, *Spiderman's* Green Goblin and *Mandalorian's* Baby Yoda

abnormal things that challenge reality's order simply by existing.<sup>9</sup>

At the same time, the goblin has reached other fields of the human imagery becoming widespread in popular audiovisual productions: goblins are employees of Gringotts, the bank of the wizards' world in the *Harry Potter* franchise, and Green Goblin is one of Spiderman's main antagonists [figs 10a-c]. Even characters that are apparently distant from the goblins resemble their appearances. This is the case with *Star Wars'* franchise character Yoda. While iconic horror-comedy *Gremlins'* director Joe Dante made claims that *Mandalorian's*<sup>10</sup> version of the character is an unoriginal dupe of *Gremlins'* Gizmo, hinting at a Disneyfication of goblins, Internet users have complementarily argued that Yoda is actually a goblin through ironic petitions<sup>11</sup> and YouTube videos<sup>12</sup> [fig. 11].

But goblins are not only pop culture icons, if only peripheral ones. The online world has added to their mythology in various ways. On slang definitions website *Urban Dictionary*, users have identified in goblin traits the behavior of chronically online users that have 'lost all of their humanity' and help trolls in their nasty endeavors<sup>13</sup> or as a populace who occupies certain spaces of the Twitter social media.<sup>14</sup> In other realms of the Internet, the goblin becomes a useful token

9 "What Fantasy Monster Would Have the Most 'evolution' (ex. Goblin -> Hobgoblin -> Ogre -> Minotaur)?" *Quora*. <https://www.quora.com/What-fantasy-monster-would-have-the-most-evolution-ex-Goblin-Hobgoblin-Ogre-Minotaur>.

10 *The Mandalorian* is the first *Star Wars* franchise's live-action series.

11 "ACKNOWLEDGE THAT YODA IS A GOBLIN". *Change.org*. <https://www.change.org/p/disney-lucasfilm-acknowledge-that-yoda-is-a-goblin>.

12 "Baby Yoda = Goblin! Mandalorian & Goblin Slayer in Space". *YouTube*. <https://www.youtube.com/watch?v=i2N7pGsZYpg>.

13 "Goblin". *Urban Dictionary*. <https://www.urbandictionary.com/define.php?term=goblin&page=3>.

14 "Goblin mode". *Urban Dictionary*. <https://www.urbandictionary.com/define.php?term=Goblin+mode>.



**Figures 11a-b** 'ACKNOWLEDGE THAT YODA IS A GOBLIN' petition and the *Baby Yoda = Goblin! Mandalorian & Goblin Slayer in Space*. <https://www.youtube.com/watch?v=i2N7pGsZYgp>.

in memes and other vernacular digital productions for users to joke, provoke, protest and cause havoc [fig. 12]. For instance, one can find on the Telegram messaging app packs of edgy and controversial goblin stickers that couple racial slurs, blackpill ideology<sup>15</sup> and general profanity [fig. 13]. Furthermore, in June 2023, a popular *D&D* subreddit experienced an “influx of sexualised goblin content” (Brown 2023) as a protest over Reddit’s controversial decision to start charging developers for access to its previously free API.<sup>16</sup> While protests began with days of subreddit censorship, Reddit administrators quickly warned users that moderators who kept their communities locked would be removed. In response, users in the 1.1 million followers *r/dndmemes* subreddit started posting memes about low-level *D&D* opponents, gradually shifting to unstoppable uploads of graphic images of goblin porn.

As these examples show, the image of goblins may be used online as a tool to execute certain actions and embody certain traits. I argue that this is because, such as for the troll, the goblins’ Internet imagery has formed by abstracting some of the qualities that are most adaptable to the ones of the medium, namely the ones of mischievousness, disavowal of rules and creating havoc in otherwise stable systems and environments. Interestingly, such traits’ abstraction also happens with other types of non-Internet phenomena. Given their supposed negative and evil nature, goblins and their ‘cousins’ are employed in medicine and marketing research studies. In these sectors ‘gremlins’ are respectively: a glycoprotein antagonist of bone

<sup>15</sup> A nihilist ideology for which society is “dominated by feminism, but given that physical attractiveness is genetically predetermined, incels are destined to either accept their fate or change society, usually through mass violence or terrorism” (Perlinger, Stevens, Leidig 2023, 6).

<sup>16</sup> API is the acronym for ‘application programming interface’: a software intermediary that allows two applications to talk to each other. APIs are an accessible way to extract and share data within and across organizations.



Figure 12  
A goblin-themed meme

morphogenetic protein actions (Koketsu et al. 2015) and information-poor respondents increasing the noise (i.e. unexplained variability within a data sample) in data statistics (Howell, Ebbes, Liechty 2021).

Until this point, on the one hand, I have shown how the lack of spaces where to practice music and create a scene due to urban gentrification has forced musicians to thrive through an internet showing a structure akin to the topology of a megadungeon. On the other, I have explained how the imagery related to medieval and goblin tropes was useful to underground musicians to express a sense of alienation and existential dread alongside with the need to counteract the causes of these feelings through imagination and creativity. Furthermore, analysing the relationships between trolling and internet practices highlights why the figure of the goblin is especially relevant to internet subcultures. To continue, I want to focus on what we can understand about emerging attitudes towards modernity through the juxtaposition of goblins and noise. Goblins as noise, as interferences of societal expectations perfectly fit the usages and ideologies born around this figure. Interpreting my analysis and the historical emergence of 'goblin mode' through this green noise, a noise framed by Attali's theories on the political economy of music, discloses paramount deductions regarding how the modes of living of underground artists is to be taken into account as a test field of ever-evolving human social conditions under capitalism. Hence, in the upcoming analysis, after highlighting the reasons and circumstances under which the 'goblin mode' trend appeared, I will circle back to our initial premises analyzing why interpreting goblins from the perspective of underground musicians can tell us much about social configurations to come.



Figure 13 Controversial pack of Telegram stickers in Italian depicting goblins

## 5 Low Level, Low Class: ‘Goblin Mode’ and Predicting the Future from the Megadungeon’s Peripheries

‘Goblin mode’ is a neologism implying the hedonistic rejection of conventional aesthetic standards without regard for one’s self-image (Schwedel 2022). While the word has been used since 2009 with various definitions, it is thought to have become popular in 2015 when comedian Sam Jelbert observed his friend Toby ‘going Goblin Mode’ (Pearce 2023). ‘Goblin mode’ has also been related to a viral Reddit post in which a user admits to acting ‘like a goblin’ at home when alone [fig. 14]. The term gained popularity after Twitter user @housesitter\_ posted in 2021 “thinkin about how someone I used to hook up with called cowgirl position ‘goblin mode’” (Adam 2022) and becoming mainstream in 2022 after a tweet by user @JUNIPER featured a doctored news story from an interview with actress Julia Fox, claiming she used the words describing her difficult relationship with Kanye West [fig. 15] (Rushforth 2022).

The term soon became ubiquitous on social media platforms like TikTok (Gilchrist 2022). This was not the first time a ‘-mode’ was coined: people started going ‘beast mode’ in 2007, using ‘savage’ and ‘sicko’ thereafter. These trends started from the gaming world, where a hidden challenge may activate a special style of gameplay (Tusa 2022). In this sense, one acquires the most apparent traits of X when you go X mode, going ‘goblin mode’, then, meant activating one’s messy, feral, mischievous self.

## I like to creep around my home and act like a goblin

Sasuke-in-SSBU · 21 hours ago · confessions · 🗳️ 3 · 98% upvoted

I don't know why but I just enjoy doing this. Maybe it's my way of dealing with stress or something but I just do it about once every week. Generally I'll carry around a sack and creep around in a sort of crouch-walking position making goblin noises, then I'll walk around my house and pick up various different "trinkets" and put them in my bag while saying stuff like "I'll be having that" and laughing maniacally in my goblin voice ("trinkets" can include anything from shit I find on the ground to cutlery or other utensils). The other day I was talking with my neighbours and they mentioned hearing weird noises like what I wrote about and I was just internally screaming the entire conversation. I'm 99% sure they don't know it's me but god that 1% chance is seriously weighing on my mind.

Figure 14 The Reddit user admits to acting 'like a goblin' at home

In December 2022, for the first time in history, Oxford allowed online users to choose their word of the year from a shortlist that included 'metaverse' and '#IStandWith'. 'Goblin mode' won. The trend's popularity has been deemed to be a result of the widespread fixation with household and personal betterment that the early pandemic had generated, and that was rejected after dealing with the prolonged state of anxiety and uncertainty (Paul 2022). The style seems in fact to be a direct break from another aesthetic: the early pandemic's hyper-curated 'cottagecore' influence, a notable 2020 trend including bucolic landscapes and the presentation of wholesome homemaking skills such as baking and embroidery. Cottagecore thrived on the nostalgic concept of making the most of what many people expected to be a few weeks at home (Paul 2022). However, as the pandemic continued and the turmoil of present events deepened with the threat of World War Three, people started rejecting such aims. 'Goblin mode' thus captured the mood of individuals who rebelled against the increasingly unattainable aesthetic standards and unsustainable lifestyles displayed on social media (Knight 2022). According to American linguist Ben Zimmer, "'goblin mode' truly speaks to the times [...] it allows people to abandon societal norms in favor of new ones".<sup>17</sup>

Practically, the 'goblin mode' umbrella described a frame of mind embracing the comforts of depravity and encompassing a wide range of aesthetics and actions expressing existential dread. Most voted *Urban Dictionary* definition recites: "When you lose yourself so you resort to becoming a goblin" (dr. shitheadashole 2022).

<sup>17</sup> <https://ludwig.guru/blog/goblin-mode-origins-and-usage-of-the-word-of-the-year-2022/>.

Julia Fox opened up about her 'difficult'  
relationship with Kanye West "He didn't like when I  
went goblin mode"

by Pinkvilla Desk | Published on Feb 16, 2022 06:36 AM IST | 1.4K



Figure 15  
The fake headline  
that popularized  
'goblin mode'

Another interesting definition from *Urban Dictionary* strengthening the relations between goblins and the Internet states that 'goblin mode' means "participating in evil and vile activities such as being chronically online" (Trech00 2022).<sup>18</sup>

These attitudes have been generally defined as antisocial: something that violates society's norms (Schwedel 2022), and although gothic researchers and experts judge the term somewhat of a misnomer, asserting that it does not embody the actual qualities of goblins (George 2022), other scholars supported the expression's current usage. Folklorist Merrill Kaplan argued that the term's precise usefulness is to be a tool for younger generations to express previously undefinable feelings (Schwedel 2022). As Shane Tilton, associate professor of writing and multimedia studies at Ohio Northern University and author of *Meme Life*, remarked in an interview with NBC News: "Once you have a word for something, it can be shared. It becomes reality. It was abstract, and you made it real" (quoted in Rosenblatt 2022).

Although the social craze is now declining in popularity (Rushforth 2022), it pointed out very real problems and suggested solutions. The term was discussed by medical experts (Mercado 2022), and it supported people who did not fit into the rigid framework of societal expectations in being themselves (Miller 2022) by offering a mythological space (Paul 2022), which is what my underground music circle of artists was already doing years before the pandemic struck and the trend emerged.

We can note the similarities between the employment of this fantasy semantics in the mainstream and in the underground. First of all,

<sup>18</sup> "Goblin Mode". *Urban Dictionary*. <https://www.urbandictionary.com/define.php?term=Goblin+mode>.

both come from feelings of discomfort and impotence towards new social configurations that heavily restrain mobility and jeopardize certainty towards the future. Secondly, in both social groupings the active employment of these symbols indicates the need to conceptualize individuals' unprecedented existential experiences and react to them taking back control over a situation of reduced agency. From this point of view, delving deeper into the relationship between music and social structures can shed light on why underground musicians experienced this phenomenon first and what it entails for my argument.

In his book *Noise: The Political Economy of Music* (1985), Jacques Attali sees music as the most potent source for comprehending the forces of production shaping the world around us. The author attempts to trace the evolution of musical ideas as they connect with material situations. In his analysis, he divides music history into four periods: Sacrificing, Representing, Repeating, and Composing; each of these foreshadowing a forthcoming revolution in the political economy. While marxist thought has asserted that political and economic forces can influence the form and substance of cultural acts like music (Marx 1887, 346), Attali reverses this relationship, asserting that music created under certain conditions articulates how things will change in the future. Specifically, Attali considered sound recording an epitome of late-stage capitalism's extraordinary productive capacities and like Adorno before him (2022), he regarded industrialization's mass production as leading to a banalization of music meeting market needs. Unlike Adorno, though, Attali maintained that these tools may be used for liberation. This leads to the text's speculative part: the period of composition. In this period, recording technologies' musical practices heralded an era of democratization, foreshadowing a broader redistribution of productive power.

Of course, his ideas met critics, not least for his eurocentric vision that does not take into account anything outside of the Western music tradition (Shaviro 2005) and the fact that, as I have shown elsewhere (Monteanni, Pennesi 2022), democratic music technologies and decentralization do not necessarily lead to a more equal society. And yet, the power of Attali's theories lies in the politicization of sound. As Steven Shaviro has noted in his text's analysis (2005), music is the structuring of sound: by channeling certain sounds in specific orders, it distinguishes between legitimate and illegitimate sounds; the latter are consigned to the category of 'noise', although the presence of 'noise' as dissent at society's periphery can never be totally erased. Through noise, a struggle exists between 'official' music, symbolizing the existing order, and a subversive counter-music, expressing the rage of those who are excluded from power, struggling to define a new form of society. The relationships between noise and power strengthen when we think that the definition of sound and noise was only possible thanks to the technological possibility of measuring, analyzing and



‘prophetic’ capability comes from corporations researching artists to understand their ability to live in hostile economic conditions so as to apply these logics to consumers. Conversely, cultural theorist Mark Fisher (2009) has remarked how artists often cause processes of gentrification, making unattractive areas interesting through music. What is fundamental here, is that the power of Attali’s theories is for the first time proved by the relevance of a basic, low level and low-class fantastic creature under-theorized by music research.

## 6 Conclusions: Life out of the Megadungeon

As I have shown, goblins are far from being exclusively escapist fantasies. Since their first descriptions they have invaded global imagination as a symbol for mischievous activity and rebellion to society’s conventions for the good and the bad. Particularly, in this article I wanted to illustrate how an archaeology of the goblin signifier informs us about larger processes taking place in society such as the need for emancipatory escapist narratives to react to increasingly difficult living conditions in our urbanized, capitalist world or the necessity of ‘inhabiting’ ever-expanding digital infrastructures to compensate progressive, compulsory social isolation and unsuitable living conditions.

Particularly, in the first section I have used my own experience as a participant of the digital underground music scene alongside qualitative, ethnographic interviews with actors closely connected to my circle to address why they found the goblin metaphor suitable to describe their living conditions and their usage of the internet for musical purposes. When paired with theories about megadungeon topologies as a model for the Internet’s architecture, these interviews have revealed that musicians perceive underground scenes as virtual locations and employ the Internet’s intricate structure as a place where to discover content, facilitate music circulation and build social circles. Additionally, I have taken into consideration theories and definition of underground music to suggest that this metagenre, a way to go about things more than a combination of definite musical styles, is especially alive on the Internet.

In the second section I showed that the fantasy and medieval imagery became relevant to these actors in order to explore and articulate both sentiments of exclusion from contemporary society as well as the necessity to exploit a renewed imaginative potential, weaponizing them through artistic and leisure creativity against their conditions of marginalization. Moreover, in the last part of this section I have also brought a case study from label HDK to underline how these imageries are, at times, deeply political and linked to class narratives generated by the experience of living under late capitalism.

In the third section I reviewed the history of the goblin as a figure of the collective imagination, explaining how from its origins in folklore to Tolkien, mainstream pop culture and, last, the Internet it has been loaded with symbols of human negativity and rouguishness. This section provided information on the reasons that made the goblin perfect as a figure symbolizing the elusion and inversion of societal expectations, something that underground musicians already embraced, and an emblem of metaphorical and literal noise.

In the last section I reviewed the birth and spread of ‘goblin mode’ and read its occurrence through Attali’s research on noise and music to prove that social movements of musicians have, coherently with the scholar’s theories, anticipated current modes of living and upcoming social configurations consisting in constrained mobilities, shunning of social norms and hypertrophic consumption of digital content.

Regarding this last point, if at the beginning of my analysis I was afraid of pigeonholing a number of real issues in made-up categories, taking seriously musicians’ interest for the character of the goblin has meant instead discovering how an imagery that is usually restricted to geeky hobbyists has become a discursive field reflecting individuals’ identities and responsibilities to confront issues of class, gender and modernity and reacting to contemporary social conditions. At the periphery of our hearing field, noisy hordes are chanting of times to come, and trying to understand their sounds – just like corporations are already doing – helps us comprehend what society at large may experience in the very next future, allowing more awareness and strategy in our incrementally necessary political action and daily survival.

And yet, to use the megadungeon vocabulary, how many treasure chests and dark chambers have yet to be opened? Certainly, my sources and imaginaries make the argument somewhat eurocentric. How would my analyses change if, for instance, we’d take a look at the figure of the Korean *dokkaebi*? Or realize that Asia is the continent that according to Google Trends was at any time the most interested in goblins?<sup>19</sup> Similarly, my debate is unsurprisingly goblin-centric. What would we discover by researching more about the differences and affinities between, say, goblins and gremlins? What could a map of these fantastical creatures reveal to us if put in relation to how individuals inside and outside the Internet realms imagine them? For the time being, I have offered a way to revalue a creature-concept that, differently from his ‘cousin’, the troll, has been completely ignored by academic literature. Then, instead of letting go of what is generally believed to be a basic, low level creature incapable of

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<sup>19</sup> Google Trends. “Goblin”. <https://trends.google.com/trends/explore?date=all&q=goblin&hl=it>.

articulation, assuming that the loot will be of scarce importance, chasing the goblin's vicious noises through today's information and musical labyrinths means trying to imagine what neglected visions and instruments lie beyond the next dungeon door and what we may discover if we crawl in these depths for long enough.

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## Year of the Goblin Mixtape

Listen at: <https://www.mixcloud.com/Shortwavessurfers/year-of-the-goblin-megadungeon-mixtape/>

Mortiis – The Song Of A Long Forgotten Ghost (1993)  
WOZZA – Wacko's (2022)  
DJ Armok – Misery ft. MC Holocaust (2019)  
Grol the Goblin – The Goblin Shroom of Doom (2018)  
Goblin King of the Popstars – Plyint (2018)  
DJ Kimchi – Goblin Mode (2022)  
talpah – THE BEGINNING AND THE END ARE ONE AND THE SAME (2021)  
Goblinectomy Beatdown – Goblincore (2022)  
Grausamkeit (B.S.o.D) – PCP Jesus (1999)  
DJ David Goblin – Squigpipe (2018)  
RED GREMLIN – Rise of the Gazunderlings (2021)  
Piyakdu – Goblin, or The Coveteousnesse of Eye (2023)  
TMT – La Stanza (2022)  
Dunkelbot – Zteč (2020)  
Kuthi Jin – Crawl (2020)  
Xperiametaphone – Ü Ä Å (2019)  
Señor Service – Levanidovo (2021)  
Babau x TMT – Paranoia Agent (2022)  
Dilian – Falls off the edge like (Ninja Exotic Machine) (2023)  
Ceramics – Goblin Gathering Side A (excerpt)  
Rhyme Artist – Previously on Goblin Tales (2023)  
loogi – ¡goblin mode! (2023)  
LUSTWARE – GOBLIN MODE (2022)  
Nekrogoblikon – No One Survives (2012)  
Goblin Noises (Sacred) (2004)



# Contemporary Adventures with *The Garden of Earthly Delights*: Open Worlds and Hieronymus Bosch

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**Abstract** Over 500 years after it was created, Hieronymus Bosch's *The Garden of Earthly Delights* continues to intrigue viewers. It has inspired contemporary artwork across diverse media including experimental film, digital animation and video games, as well as providing stimuli for curators, critics and collectors. This article maps present-day approaches to *The Garden of Earthly Delights* and links the enduring appeal of this painting to its interactive, multi-layered structure in which countless narrative vignettes play out simultaneously. Contemporary artworks that reference Bosch's triptych are examined, with a special focus on digital creations by SMACK, Miao Xiaochun, Michael Bielicky and Kamila B. Richter. The exhibition *The Garden of Earthly Delights Through the Artworks of Colección SOLO* is also analyzed to illustrate how an understanding of Bosch's work as interactive art informed the exhibition discourse, publication and architecture.

**Keywords** Hieronymus Bosch. The Garden of Earthly Delights. Contemporary art. New media art. Digital art. Open worlds. Megadungeon. Exhibition design.

**Summary** 1 Introduction. – 2 A Labyrinth to Explore. – 3 Mapping Contemporary Delights: Fantasy, Sex and Space. – 3.1 Fantasy. – 3.2 Sex. – 3.3 Space. – 4 Digital Specula. – 4.1 Microcosm. – 4.2 The Garden of Error and Decay. – 4.3 Speculum. – 5 *The Garden of Earthly Delights* through the Artworks of Colección SOLO. – 6 Conclusions.



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## 1 Introduction

The triptych by Hieronymus Bosch (Jheronimus van Aken) known as *The Garden of Earthly Delights* is one of the world's most recognisable paintings. Housed at the Prado Museum, Madrid, it is viewed each year by millions of visitors, while its fantastical scenes have brought the term 'Boschian' into the popular lexicon as a synonym for all things bizarre or weirdly hellish. The work is easily accessible online, while its imagery can be found on a dizzying array of products, from bikinis to Dr. Marten boots.<sup>1</sup>

While present-day references to *The Garden of Earthly Delights* are widespread, written historical sources on this iconic painting are very limited. The original title is unknown and documentation to conclusively establish a production date or patron is lacking. Most records on the painter's life have also been lost, leaving fertile ground for scholarly debate on his ideas, motivations and sources of inspiration. Colourful and conflicting theories, together with the work's rich, highly imaginative content, have turned *The Garden of Earthly Delights* into an experimentation site for numerous contemporary artists and curators.

This paper suggests that the megadungeon concept can shed light on these contemporary approaches to *The Garden of Earthly Delights*. Bosch's triptych itself, it will be argued, can be viewed as a multi-layered experience, an open world in which various different pathways may be explored. Three of these routes – fantasy, sex and space – are used to map and contextualize a selection of contemporary artworks inspired by Bosch's painting.

The digital artworks *Microcosm* (2008) by Miao Xiaochun, *The Garden of Error and Decay* (2010) by Michael Bielicky and Kamila B. Richter, and *Speculum* (2016-19) by SMACK, are then examined in detail. Like *The Garden of Earthly Delights*, these are immersive spaces, ripe with symbolism, conceived to invite conversation. Finally, *The Garden of Earthly Delights through the Artworks of Colección SOLO* (Matadero Madrid, 7 October 2021-27 February 2022) is also analyzed to illustrate how an understanding of Bosch's work as interactive art informed the discourse, publication and architecture of a major exhibition.

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<sup>1</sup> An interactive, high resolution reproduction is available at <https://archieff.ntr.nl/tuinderlusten/en.html#>.

## 2 A Labyrinth to Explore

The year after Hieronymus Bosch's death, Antonio de Beatis, secretary to the Italian cardinal Luigi d'Aragona, visited Count Henry III of Nassau at Coudenberg Palace, Brussels. His journal entry for 30 July 1517 includes what Gombrich identified as the earliest surviving description of *The Garden of Earthly Delights*:

Ce son poi alcune tavole de diverse bizzerrie, dove se contrafanno mari, aeri, boschi, campagne et molte altre cose, tali che escono da una cozza marina, altri che cacano grue, donne et homini et bianchi et negri de diversi acti et modi, ucelli, animali de ogni sorte et con molta naturalità, cosi tanto piacevole et fantastiche che ad quelli che non ne hanno cognitione in nullo modo se li potriano ben descrivere. (Gombrich 1967, 403)<sup>2</sup>

In the 500 years since, Bosch's artwork has given rise to innumerable descriptions, theories and studies. By the mid-sixteenth century, the artist was described as a "devil maker" (Koldeweij 2001, 100) – an epithet reflected in the title of the first monograph (Gosart 1907) – and has since been cast as a member of different heretical sects (Fraenger 1947; Harris 1995), an alchemist and consumer of rye-bread mould proto-LSD (Dixon 2003).<sup>3</sup>

Although the most extravagant speculations are generally rejected by Bosch scholarship, the quantity and variety of approaches is significant in itself. Bosch's imagery – in particular *The Garden of Earthly Delights*, in which diverse visual narratives take place simultaneously – provides an enabling space for the imagination, presenting the viewer with a series of open worlds begging to be explored.

*The Garden of Earthly Delights* is now thought to have been painted c. 1490-1500, most likely commissioned by Engelbert II of Nassau or his nephew, Henry III. The original title of the work is unknown, current usage dating from the nineteenth century. On arrival to El Escorial Monastery in 1593, it was registered simply as: "una pintura de la variedad del mundo, que llaman el Madroño" (Maroto 2016a,

<sup>2</sup> En. transl: "There are some paintings of diverse bizarre things, representing seas, skies, woods, fields and many other things, such as some who emerge from a sea mussel, others who are defecated by cranes, women and men both white and black in diverse actions and poses, birds, animals of all sorts and with much naturalness, things so pleasant and fantastic that to those who have no knowledge of it, it cannot be described well in any way" (transl. by R. Falkenburg 2016).

<sup>3</sup> A literature review is provided in Marijnissen ([1987] 2007, 84-102). To coincide with the 500th anniversary of the artist's death, exhibition catalogues were also published by the Prado Museum (Maroto 2016a) and Het Noordbrabants Museum (Ilsink, Koldeweij 2016), both of which include comprehensive bibliographical information.

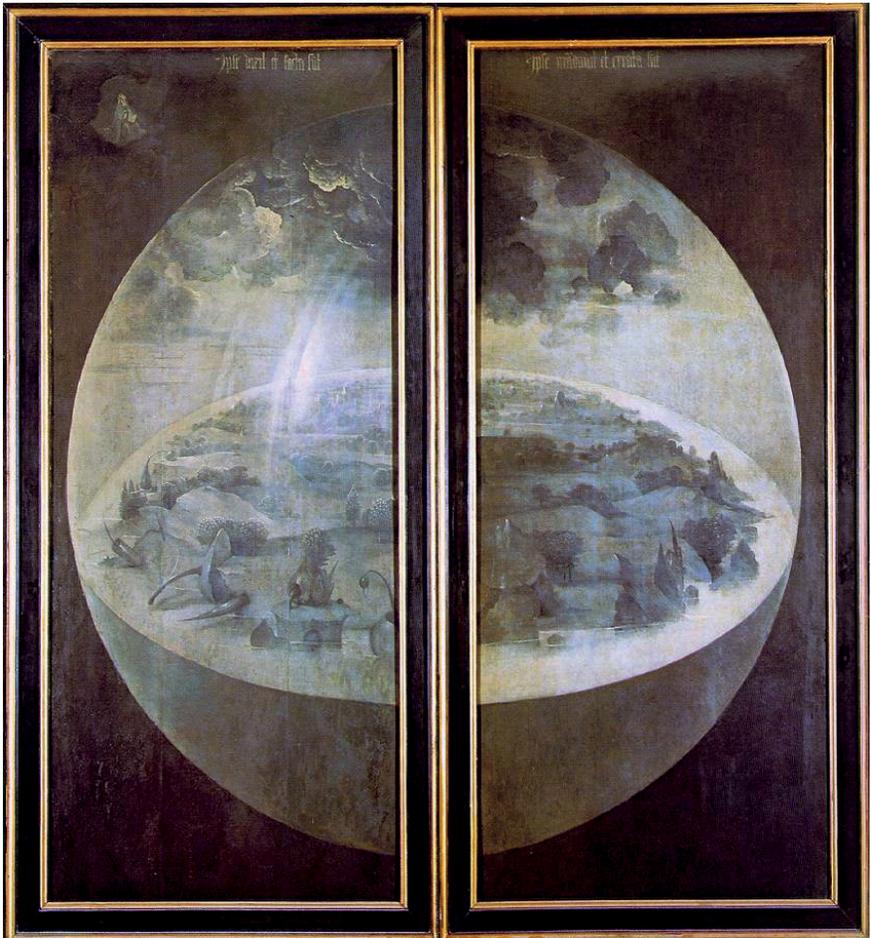
330, 'a painting on the variety of the world, which they call the Strawberry Tree').

When closed, the triptych's outer panels show the world on the third day of creation [fig. 1]. Within a giant, glass-like orb, bulbous plants emerge from a watery landscape while God looks on from above. Once opened, grisaille gives way to spectacular colour and a wealth of interconnected scenes [fig. 2]. In the left panel, *Paradise*, God the Father presents Eve to Adam in a fanciful landscape dominated by shades of green, pink and blue, in which hybrid creatures coexist alongside exotic animals including a giraffe and an elephant. This scene is connected by a single horizon line to the central panel, *The Garden of Earthly Delights*, in which couples or groups of naked figures engage in playful and sexual activities. Bizarre architectural constructions punctuate the landscape, while oversized birds and fruits add to its dreamlike or otherworldly feel. *Hell*, depicted in the right panel, shows all manner of punishments, including characters tortured on giant musical instruments or devoured and excreted by a beaked hybrid. In the centre, the enigmatic Tree Man gazes back from a scene of suffering and destruction which stretches from the frozen waters beneath him to the burning buildings in the distant background.

Although Bosch's imagery can appear outlandish to the modern gaze, *The Garden of Earthly Delights* is packed with visual references which would have made its storyline clear to its intended audience. To late-Medieval viewers, the fish was a phallic symbol, rabbits and birds referenced sexual activity and musical instruments could point to decadence or sloth. As Gibson explains, strawberry bushes were viewed as a hiding place for the devil and symbolized the fleeting nature of pleasure (Gibson 2003). What emerges, then, is a fairly straightforward narrative: keep your libido in check or the afterlife is bleak.

*The Garden of Earthly Delights*, however, is far more than a simple warning on the dangers of lust. In *Hell*, a whole range of sins are punished, including avarice and gluttony, while gambling, music and the nature of chivalry are all called into question. As Reindert Falkenburg has convincingly argued (2011; 2016), this triptych can be viewed within the 'princely mirror' genre, a starting point for discussion or reflection – *speculatio* – on the state of the world and one's place within it. This perspective is of particular relevance with regard to contemporary iterations of *The Garden of Earthly Delights*, especially the digital works discussed in Section 4.

Connected to its likely role as a conversation starter is another aspect of *The Garden of Earthly Delights*, essential to bear in mind when examining contemporary approaches: the triptych as an experience. The art critic Waldemar Januszczak observes: "When you walk into it you feel as if you're walking into a landscape. It has a physical scale that impacts on you" (Ramirez 2017).



**Figure 1** Hieronymus Bosch, *The Third Day of Creation*. Outer panels of *The Garden of Earthly Delights Triptych*. Ca. 1490-1500. Oil on oak panels. 220 × 195 cm. Madrid, Prado Museum

This effect was clearly not lost on early viewers. In secular settings, triptychs were generally displayed closed, to be opened only on special occasions for high-ranking visitors. The experience of Bosch's work would be journey-like, starting from the grisaille exterior, through the triptych's doors, into a world of unbridled fantasy. As Gombrich noted (1967, 405), the tone of Antonio de Beatis's account, far from focussing on the religious or moralizing features of the painting, seems to suggest entertainment or amusement. Court visitors were used to enjoying *entremets* – performances or *tableaux vivants* staged as breaks during elaborate banquets – and Falkenburg links



**Figure 2** Hieronymus Bosch, *The Garden of Earthly Delights Triptych*. Ca. 1490-1500. Oil on oak panels. 185.8 × 172.5 cm (centre panel); 185.8 × 76.5 cm (left and right panels). Madrid, Prado Museum

these to playful scenes in *The Garden of Earthly Delights* (2016, 148). It is perhaps not too fanciful to suggest that the work itself provided a form of home entertainment for Henry III of Nassau and his guests.

This viewpoint resonates in a contemporary art landscape where immersive experiences, virtual or mixed-reality environments and the metaverse are all the order of the day. Notions of stepping inside or repopulating *The Garden of Earthly Delights* are common to a number of present-day approaches, while the original's wealth of narrative scenes appeals directly to contemporary tastes, shaped by gamification, digital experience and interconnectedness. The *Third Day of Creation*, on the triptych's closed shutters, will seem strikingly familiar to users of geographic information systems or fans of drone imagery. Bosch presents the viewer simultaneously with an entire planet and close-ups of individual rocks or plants, as though we have zoomed in on the watery orb. As Asa Mittman observes:

The vantage afforded by Bosch to the supreme deity is the very viewpoint presented by Google Earth as we hover, held aloft by an unseen force, as far above or as close to the surface of the planet as we wish. (Mittman 2012, 940)

Modern-day viewers familiar with the labyrinthine structures of fantasy role playing, open world or sandbox games will have no difficulty in recognizing the 'portals' employed by Bosch. The left panel, *Paradise*,

features a number of images used to indicate that sin is already present: an owl – a symbol for evil or the Devil – gazes out from a circular opening in the central structure, while in the foreground, sinister creatures emerge from a dark pool whose colour palette seems to connect directly with *Hell*. Layered, intersecting scenes dominate in *Paradise* and *Hell*, which both feature numerous examples of worlds within worlds, from bell shaped corollas inhabited by couples or trios to the iconic Tree Man, whose body doubles up as a tavern.

Of course, none of this goes to suggest that Bosch was a gamer, 500 years before his time! It is the case, however, that the speculative concept of the megadungeon (Berti 2022), can shed some light not only on contemporary visions of *The Garden of Earthly Delights*, but also on the enduring appeal of the original into the post-digital age. Although Bosch's storyline may be implacably linear, from sin through to punishment in hell, the visual effect of *The Garden of Earthly Delights* is that of an open world: the viewer's eye and imagination are actively invited to wander.

### 3 Mapping Contemporary Delights: Fantasy, Sex and Space

#### 1.1 Fantasy

Hieronymus Bosch must have lived in two different worlds: the real one around him, and the universe of his imagination.

(Ilsink, Koldeweij 2016, 9)

The visual universe presented in *The Garden of Earthly Delights* is compellingly weird. Structures built of rocks, plants and alchemical glassware dominate landscapes populated by hybrid creatures, lithe bodies and grotesque demons. Proportion is reimaged, enabling naked couples to ride giant birds or play inside oversized fruits, while everyday objects such as knives or musical instruments take on new roles in hell. It is little surprise, then, that one of the most commonly used adjectives to describe Bosch's work is 'surreal'. Surrealism itself has long been associated with Bosch, and his ingenious fantasies continue to attract contemporary surrealists across a range of media.

Links with *The Garden of Earthly Delights* can be found in a number of works by pioneering artists of the early twentieth century. Miro's *The Tilled Field* (1923), features stylized plant forms, birds and a huge ear which echo imagery from Bosch's triptych, while Dalí appears to have borrowed the head-shaped rocks from *Paradise* (albeit turned on their sides) for *The Great Masturbator* (1929). Frida Kahlo repurposes a giant bird from the central panel in her dreamscape, *What the Water Gave Me* (1938) and Max Ernst included the Dutch master in his word-collage *Favorite Poets Painters of the Past* (1942).

However, as Tessel Bauduin has shown (2016; 2017), it was critics, curators and dealers who first linked surrealist artists with Bosch, so providing impetus for artistic appropriation. Alfred H. Barr Jr., in his exhibition *Fantastic Art, Dada and Surrealism* (9 December 1936-17 January 1937, MoMA, New York) argued for a super-genre of 'fantastic art' which crossed chronological boundaries to reflect:

the deep-seated and persistent interest which human beings have in the fantastic, the irrational, the spontaneous, the marvelous, the enigmatic, and the dreamlike. (Barr 1936, 9)

In Barr's view, Bosch was a groundbreaker, who: "transformed traditional fantasy into a highly personal and original vision which links his art with that of the modern Surrealists" (9).

Artists themselves apparently warmed to this interpretation. While André Bretón omitted Bosch from his *Surrealist Manifesto* (1924), his image essay for the exhibition *First Papers of Surrealism* (14 October-7 November 1942, Whitelaw Reid Mansion, New York) opens with the fountain from *Paradise*.

Fast-forward to Lowbrow - also known as Pop Surrealism - and Bosch appears again as the go-to reference for curators and commentators alike.<sup>4</sup> Mark Ryden is one of the movement's best known figures and in the curator statement to the artist's exhibition *Wondertoonel* (Frye Art Museum Seattle, November 2004-February 2005; Pasadena Museum of Californian Art, February 2005-May 2005), Debra Byrne describes Ryden's work as carnivalesque, identifying this genre as: "a strain of visual culture rooted in such works as Hieronymus Bosch's *Garden of Earthly Delights*" (Byrne 2005).

The exhibition *Within The Garden of Earthly Delights* hosted by Outr  Gallery, Melbourne, in 2019 (6-24 April) brought together Bosch-inspired pop surrealist and fantasy works by over 30 different artists including Peca, Travis Lampe and Roby Dwi Antono. Gary Baseman - another figure often associated with the Lowbrow scene - had already referenced Bosch's triptych back in 2005 with a collection of paintings entitled *The Garden of Uneathly Delights*. In these works, the artist humorously tackles Freud's pleasure principle, depicting demons as cheeky cartoon figures which force our suppressed desires into action [fig. 3]. More recently, digital surrealists such as GIF artist Sholim or the animated video creators, Cool 3D World, have also responded to Bosch in *Heaven x Hell Series* (2020) and *El rey de la vida* (2018) respectively.

<sup>4</sup> Lowbrow traces its origins to the pop culture, comic and underground cartoon aesthetics of 1960-70s Los Angeles and has become more widely known since the early 1990s, particularly through the impact of publications such as *Juxtapoz* and *Hi Fructose*. For an overview of the genre, see Anderson 2004.



**Figure 3** Gary Baseman, *Devil Heart*. 2005. Acrylic on wood panel. 45.7 × 61 cm. Courtesy of the artist. © Gary Baseman

Most often, however, Bosch crops up in press coverage and descriptions of work by pop surrealists not because of direct visual or conceptual referencing but because he is popularly understood as a pioneer in envisaging the type of fantastical worlds these artists depict. A summary of this effect is provided by Davor Gromilovic, a Serbian artist whose offbeat pencil drawings have provoked comparisons with Bosch:

We could say that Bosch is the great-great-grandad of this kind of work. He opened a really important door for later generations, for artists who explore their inner world, their imagination and fantasy. (Rhodes 2021, 80)

## 1.2 Sex

Sex is everywhere in the central panel of *The Garden of Earthly Delights*. Erotic scenes unfold inside a giant mussel shell, a transparent sphere or on the back of an oversized duck. In the blue central fountain, a bearded man touches a woman's genitals, while in the foreground, an upturned character masturbates.<sup>5</sup> Numerous visual elements such as fruits, fish or birds make direct symbolic reference to sexual activity, as mentioned in Section 2, and some of Bosch's scenes have been linked to erotic games played at court during the late-Medieval period (Falkenburg 2016, 146-8). Lust is clearly punished in *Hell*: the toad – a symbol of impurity, connected to the Devil – makes various appearances, including on the standard of a fallen knight and the chest of a naked woman.

In contemporary approaches, sex is addressed by a number of artists who upend Bosch's moralistic focus with erotic, celebratory and critical works. An outstanding example is the series *Garden of Earthly Delights* (2002-05) by Raqib Shaw. Born in Calcutta, then raised in Kashmir and the UK, Shaw creates opulent paintings using materials including industrial paints, car enamel, glitter and semi-precious stones. His visual universe draws on a wide range of sources, such as Persian miniatures, Japanese decorative arts, Kashmiri prints, jewellery and textiles. Works from his Bosch-inspired series depict orgiastic paradises populated by hybrid creatures: *Garden of Earthly Delights X* (2004), held by MoMA New York, is set in an extravagant coral reef, while *Garden of Earthly Delights VIII* (2005) shows a Minotaur ejaculating into a cloud of brightly coloured butterflies. Alpesh Kantilal Patel (2012, 2) has explored how Shaw's explicit carnivalesque "queers broad notions of South Asian masculinity", while the artist himself points to a scene in *Garden of Earthly Delights III*, where a giant shrimp has sex with a man on a bed of seaweed, as a commentary on sexual preference (Daftari 2006). In an interview regarding this work, Shaw explains:

in this painting what I really wanted to deal with was the moment when we actually have an orgasm [...] the work is made from a place of no inhibitions. There are no moral policeman [sic], there is no morality. It is what it is, and it is happy to be what it is.

A similar view is taken by the Canadian artist, Dave Cooper, whose oil painting *Bosco Cooper* (2018), depicts a cast of cartoonish oddballs enjoying a bizarre orgy. Nature itself seems to participate, with

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<sup>5</sup> Eric De Bruyn provides a fascinating analysis of this scene, linking the character's apparently prayerful gesture with sexual activity (2016, 81-3).

the landscape dominated by bulbous forms, penis-shaped plants and nipple-like flowers. Characters from Bosch's original are humorously replaced: Adam is portrayed as a lascivious dog, Eve is a beaked bird with wide eyes and large breasts, while God, as described by the artist, is "just two giant cocks with eyes on the end" (Rhodes 2021, 26). In response to *The Garden of Earthly Delights*, Cooper presents a carnival of kinky sensuality and transgression. Like Shaw, he reworks Bosch's moral tale as a celebration of sexual freedom, stating that:

As long as all those weirdos in my painting are consenting adults, then it's all ok. In my mind, it's not about good and bad any more. It's just light, dark, cheerful, aggressive. (28)

A less permissive view was taken of Silvano Agosti's, *Il giardino delle delizie* (1967) by Italian film censors, who initially cut more than 25 minutes from what is now regarded as:

a gem of modernist cinema [...] a quintessential film of its age that can be viewed as a veritable time capsule, preserving the sizzling rebellious spirit of the Beat generation. (Petho 2014, 475)

Agosti's debut feature borrows from Bosch in a work loaded with subtlety erotic imagery, which calls out the hypocrisy of bourgeois values and the Catholic church. The protagonists, Carla and Carlo, have married only because the former is pregnant; their honeymoon descends into physical and mental agony, translated on screen into a series of hallucinatory images. In the opening sequence, the bride gazes straight at the audience as she sensually takes a bite of a cherry - a clear reference to *The Garden of Earthly Delights* - before the camera lingers on equally suggestive scenes of a knife cutting into the wedding cake or the champagne glasses being filled. The circuit of bareback riders from Bosch's central panel is quoted in a bizarre dance sequence in which fun-loving youths and a procession of altar boys appear in the same riverside setting. Less explicit than the cited works by Raqib Shaw or Dave Cooper, Silvano Agosti's film translates Bosch's innuendo-filled world into a series of elegant, lingering scenes and a searing indictment of marriage.

### 1.3 Space

In *El jardín deshabitado* (2008), Jose Manuel Ballester meticulously edited a digital reproduction of *The Garden of Earthly Delights*, erasing every character, animal and bird. The result is an eerie landscape, punctuated by the fantastical structures and organic forms of the original, which not only speaks of absence or memory but also

serves as an invitation. In the viewer's imagination, the question arises whether to repopulate or leave untouched this vacated world.

The notion of re-inhabiting Bosch's triptych is common to various contemporary visions of the work. Lluís Barba's *Travellers in Time: The Garden of Delights* (2007-15) sees colour images of celebrities, tourists and brand logos invade a black and white reproduction of Bosch's painting, while Carla Gannis harnesses the popular imagery of mobile messaging for *The Garden of Emoji Delights* (2014). Dan Hernandez reimagines the space itself: in the mixed media panel, *GOED* (2020), Bosch's triptych is reworked as an open world game based on the map for *The Legend of Zelda* (Nintendo 1986). Populated by characters from video games, cartoons and late-Medieval paintings, this is literally a megadungeon. As the artist explains: "It's an adventure story, a world that you would try to explore. [...] In my mind, I think you could play it" (Rhodes 2021, 60, 64).

Cassie McQuater also recasts *The Garden of Earthly Delights* as a retro video game. In line with Hans Belting's view of Bosch's central panel as "a utopian vision of a world that never existed" ([2002] 2018, 54), in *Angela's Flood* (2020), McQuater custom-builds a pleasure garden for three female characters. Angela Belti, Super Kurara (both *Power Instinct*, Atlas for Arcade, 1993) and Deliza (*Dragon Master*, UNICO Electronics for Arcade, 1994) blow kisses, rollerblade and show off their muscles in a bespoke environment which subverts the violent, male-dominated narratives for which they were first developed [fig. 4].

Physical, not only digital, re-inhabitation of Bosch's masterpiece is central to other contemporary iterations. In Lech Majewski's film *The Garden of Earthly Delights* (2004), the protagonists re-enact erotic scenes from the painting, which are recorded, played and re-recorded to create a visual narrative of multiple layers. Audiences themselves shape Jeffrey Shaw's, *Going into the Heart of the Center of the Garden of Delights* (1986), a site-specific piece created for Vleeshal, the Netherlands, in which visitors' movements along a 30-metre pathway generate sequences of digitally processed images drawn from works by Bosch, Yves Klein and Nagisa Oshima. Martha Clarke, meanwhile, translated Bosch's painting into dance in 1984 (re-staged in 2008), employing harnesses and flying techniques in a visceral adaptation, which is still revered. Theatre critic Charles Isherwood summarizes:

This singular work of dance theater is without doubt one of the most eerily hypnotic spectacles of flesh in motion ever put on a New York stage. (*The New York Times*, 19 November 2008)

These examples link with a view of Bosch's work as an active experience, as outlined in Section 2. *The Garden of Earthly Delights*, however, has served not only as a world to inhabit or repopulate, but as an enabling space, a site for experimentation. In this respect, *The*



**Figure 4** Cassie McQuater. *Angela's Flood* (detail). 2020. Single-channel colour video of HTML work. 12'57". Colección SOLO, Madrid. Courtesy of the artist and Colección SOLO. ©Cassie McQuater

*Garden of Earthly Delights* (1981) by Stan Brakhage is the most remarkable example. To make the two-minute film, Brakhage pressed leaves, grasses and flowers between strips of celluloid, creating 2469 frames which, in movement, translate into a unique synaesthetic experience for the viewer. The work is often seen as a partner to *Mothlight* (1963), the artist's highly influential collage film made using moth wings and petals. In an interview with Scott MacDonald, the avant-garde filmmaker explained his feelings about Bosch's original:

At the time I made *The Garden*, I was very annoyed with Hieronymus Bosch's painting of the same name, which envisions nature as puffy and sweet, while the humans are suffering all these torments. After all, nature suffers as well. As a plant winds itself around a rock, in its desperate search for sunlight, it undergoes its own torments. We are not the only ones in the world. (MacDonald 2005, 94)

In a present-day shaped by climate crisis, Brakhage's words seem prescient. In centring our gaze on nature, his work aligns with other environment-focussed approaches to Bosch, such as those brought together in the exhibition *Garden der irdischen Freuden* (Gropius Bau Berlin, 26 July-1 December 2019) and accompanying catalogue (Rosenthal 2019). Within the scope of this article, however, the most significant feature of Brakhage's film is the artist's ability to free the eye from perspective, logic or preconception; to take the viewer on what he describes as "adventure of perception" (Brakhage quoted in Petho 2014, 482).

A related adventure is provided by Enrique del Castillo, whose *Umbráfono II* (2021) is a machine which reads patterns on 35mm film and turns them into sound. For the exhibition *The Garden of Earthly Delights through the Artworks of Colección SOLO*, discussed in Section 5, del Castillo developed five compositions inspired by Bosch's triptych and the polyphonic music of its time. Another "experiment about perception" (Rhodes 2021, 158), as the artist describes the piece, is *The Garden of Ephemeral Details* (2020) by Mario Klingemann. In real time, a suite of algorithms developed by Klingemann engages with a digital image of Bosch's original, transforming its visual content through a continuous cycle of analysis, change and restoration. Artificial intelligence brings its unique 'eye' to Bosch, reworking the triptych into a fluid screenscape of abstract forms.

## 4 Digital Specula

### 1.4 Microcosm

I don't know if Bosch is saying, "This is bad, this is good". He gives me many, many possibilities and, for me, this complication is very interesting. So when I make my video works, what I want to do is the same: I want to make very open artworks.

(R. Rhodes,  
Interview with Miao Xioachun, 24 April 2021)

As outlined in Section 2, *The Garden of Earthly Delights* resonates with present-day aesthetics explored in Kwastek (2015), Jagoda (2016) and Robson, Tavinor (2018), among others, as particularly appreciative of interactive, non-linear media. The layered, multiple-narrative, inhabitable character of Bosch's original also fits with the concept of a megadungeon as "interconnected, layered, maze-like, procedural" (Berti 2022). It is perhaps for this reason that artists have found in the work a timely and attractive candidate for re-writing in digital media.

Reindert Falkenburg has argued (2011; 2016) that *The Garden of Earthly Delights* can be understood as a 'princely mirror', the visual equivalent of writings such as *The Education of a Christian Prince* (1516) by Erasmus or Castiglione's *Il Cortegiano* (1528). This section highlights three works by contemporary digital artists which bring Bosch's *speculum* into the present-day. In each case, the viewer is presented not with simple mirrors to reality but with open worlds to experience, inhabit and discuss.

The first of these digital reworkings, *Microcosm* (2008), actually comprises two pieces: a nine-panel C-print installation and a 16-minute video, generally exhibited together [fig. 5]. Directly inspired by Bosch's *The Garden of Earthly Delights*, this digital project



**Figure 5** Miao Xiaochun, *Microcosm*. 2005. Single channel video animation. 15'55". Courtesy of the artist. ©Miao Xiaochun

was developed over an 18-month period by the Chinese artist, Miao Xiaochun.

It forms part of his *Renaissance Trilogy*, together with *The Last Judgement in Cyberspace* (2005), based on Michelangelo's fresco in the Sistine Chapel, and *H2O* (2007), after Cranach's *The Fountain of Youth* (1546).

To create *Microcosm*, Xiaochun developed a digital 3D model in which all the figures in the original work are replaced, many with references to contemporary life. Adam becomes a robot, tirelessly coding a new future, and Eve is replaced by the Venus de Milo, unable to reach out for the forbidden fruit as she has no arms. The central fountain is a glistening mass of liquefied vehicles, while the riders carry plastic bottles, tins or kitchen utensils. Weapons, computers and mobile devices abound, plastic animals outnumber their wild counterparts and every character is exactly the same: a digital rendering of the artist's naked body. As Miao Xiaochun explains:

A body is more of a symbol. Once a body puts on clothes, there will be some sort of representation, for example, a certain time, a certain social class. If I only use the body, these representations do not exist. [...] Then we can talk about abstract issues, like birth and death. (Du 2009)

In this respect, Bosch's approach is similar. Hans Belting describes Bosch's characters as "ageless", "doll-like" and "devoid of individual traits" ([2002] 2018, 54), while Nils Büttner sees them as "flat figures that are almost pictograms" (2014, 283).

By using his own body in *Microcosm*, Miao Xiaochun literally inhabits the work. His creative process itself also involved journeying inside his version of Bosch's triptych:

I build the virtual world and then I can walk inside. I can take photographs with a virtual camera and make video with a virtual video camera. All of this is virtual; it only exists in the software. (R. Rhodes, Interview with Miao Xiaochun, 24 April 2021)

It is not only the artist who steps inside *Microcosm*. Each panel of the nine-part work offers three different scenes and the panels themselves are presented as a continuum of three triptychs, with the side wings at 45° angles from the wall. The effect is that when a viewer stands at any point in the installation, they are able to appreciate numerous other perspectives. The artist summarizes his aim as follows:

To see death from birth, and birth from death;  
To see hell from heaven, and heaven from hell;  
To see the end from the beginning, and the beginning from the end.  
(Xiaochun 2008)

These multiple perspectives are further complemented by the video, whose sweeping shots lift the viewer above, below and into the action. Xiaochun describes it as "a river, flowing from beginning to end" (R. Rhodes, Interview with Miao Xiaochun, 24 April 2021) and the viewer is hurled inside. As Huang Du explains (2009) the title itself refers to perspective and our limitations in understanding, playing on the Chinese idiom "looking up to the sky from the well" and the literary translation for "microcosm" as "looking down the well from the sky".

Xiaochun builds a new world and brings the viewer inside it to meditate on the nature of progress, our relationship with technology and how we relate to our environment. In offering numerous perspectives on the same scene, *Microcosm* links with traditional Chinese paintings, in which the same character can appear at various different points.<sup>6</sup>

For the artist, this approach strengthens the work's emotional impact: "It puts more emphasis on subjective feelings. [...] When I see the scenes, I feel like I see the whole story" (Du 2009).

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<sup>6</sup> Further information on how Miao Xiaochun blends references to Chinese philosophy and Western art are provided in Ippolito 2017 and Zielinski 2010.

With *Microcosm*, then, Miao Xiaochun offers the viewer an open world not only to inhabit and explore, but to ‘feel’. A mirror to the present, in which the viewer is an active participant.

## 1.5 The Garden of Error and Decay

In *The Garden of Error and Decay* (2010) by Michael Bielicky and Kamila B. Richter, the spectator plays an even greater role. In this interactive work, an animated pictogram appears on the screen every time a disaster-related topic is discussed on Twitter. Using a joystick located in the exhibition space, viewers can shoot at these symbols, choosing to multiply each disaster or eliminate it from the ever-changing screenscape [fig. 6].



**Figure 6** Installation view of *The Garden of Error and Decay* (2010) by Michael Bielicky and Kamila B. Richter. Courtesy of the artists. ©Michael Bielicky and Kamila B. Richter

The pictographs themselves border on cute. There are simple stick-characters with large round eyes, comic-like skeletons and humorous references to historical figures, as well as geometric trees and animals reminiscent of those found in children’s books. Bosch’s *The Garden of Earthly Delights* is referenced with giant cherries and strawberries. The inoffensive appearance of these pictograms contrasts with the hard data driving their presence on screen: behind each cartoonish figure lies an environmental disaster, terror attack, war, financial crisis or health emergency and the Twitter conversation surrounding it. This disjunction inevitably raises

questions about the ways in which horror is depicted, discussed or even commodified.

It is worth noting that real events also feature in Bosch's original, although most analyzes have centred on symbolism or abstract notions of sinful behaviour. One group of riders bears a porcupine standard, the personal device of King Louis XII of France, an image which would surely have resonated with viewers at a time of intense rivalry between the kings of France and the dukes of Burgundy (Falkenburg 2016, 154). Depictions of exotic animals such as the elephant or giraffe draw on fifteenth century travel journals, for example by Cyriacus of Ancona, and the dating of Bosch's painting is hugely relevant in itself. *The Garden of Earthly Delights* is thought to have been completed in the late 1490s, with the European world-view upended as a result of Columbus's voyages. Hans Belting sees a direct link between these real-world events and Bosch's imaginative central scene:

The conquest and charting of the world irrevocably pushed the existence of a terrestrial Paradise into the realm of dreams. (Belting [2002] 2018, 99)

Contemporary events underpin *The Garden of Error and Decay*, described by the artists as "a real-time, data-driven narrative" (Bielicky, Richter 2011). Spectators are called not only to observe or reflect on the present, but to shape a new world on screen. However, when a viewer shoots to eliminate disaster pictograms, other data comes into play. Real-time stock market information is also fed into the piece, and it is this data - not the spectator's actions - which ultimately dictates whether disasters proliferate or recede.

*The Garden of Error and Decay*, then, is an interactive allegory, addressing the relationship between the individual and global events. It reflects the abundance of data in our networked present, gamification, and the endless opportunities for online debate: *speculatio* transposed to and transformed by social media. At the same time, Bielicky and Richter highlight the impotence of the individual, unable to impact on world-changing events even if they choose to act.

## 1.6 Speculum

In line with the basic structure of Bosch's original, *Speculum* (2016-19) is a three-channel video installation developed using 3D digital animation [fig. 7]. In each scene, borrowings from *The Garden of Earthly Delights* are adeptly reworked and combined with references to popular culture, including celebrities, cartoon characters and memes. Mass behaviour, digital identity and ubiquitous technologies are all



**Figure 7** Installation view of *Speculum* (2016-19) in the exhibition *The Garden of Earthly Delights through the Artworks of Colección SOLO*. Madrid, Matadero (7 October 2021-27 February 2022). Photograph: Alberto Triano. Courtesy of Colección SOLO. ©SMACK

addressed in a moving triptych which employs brand-new symbolism to present a crude yet entertaining mirror of contemporary life.

The digital arts collective, SMACK (Ton Meijdam, Thom Snels and Béla Zsigmond), developed *Paradise*, the central panel of *Speculum*, as a commission for the exhibition *Nieuwe lusten*, held at the MOTI in Breda from 2 April to 31 December 2016.<sup>7</sup> Described in a Jheronimus Bosch Art Center review as “the most successful part of the exhibition” (18 July 2016, <https://jeroenboschplaza.com/recensie/nieuwe-lusten-2016/?lang=en>), *Paradise* was widely covered online and later attracted the attention of Ana Gervás and David Cantolla, the founders of Colección SOLO Madrid. They acquired the work and subsequently commissioned SMACK to create *Eden* and *Hell*, so completing the digital triptych.

Mass behaviour is a central theme in SMACK’s artistic practice and *Speculum* contains numerous references to group dynamics and identity. All three scenes, for example, feature plants, structures or bulbous creatures formed of many different bodies or heads, some of which are recognisable celebrities. Visually, these clusters of heads

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**7** This exhibition formed part of the Bosch500 programme to commemorate 500 years since the artist’s death. MOTI (Museum of the Image) Breda is now the Stedelijk Museum Breda.

recall the giant forest fruits in *The Garden of Earthly Delights*, yet as SMACK explain, their imagery speaks directly to the present: “The idea was to show how a community works, online or in the analogue world. It’s the crowd compressed into one creature” (Rhodes 2021, 116).

In a contemporary environment shaped by social media echo chambers and bot-enhanced misinformation, the relevance of this imagery is clear. *Speculum*’s population, however, does not operate exclusively in groups: each character in *Paradise* is trapped in an individual loop, a reflection of self-obsession, isolation or loneliness.

Pervasive technology is also explored through skilful borrowings and revamped symbolism. In the left panel of *The Garden of Earthly Delights*, an owl – often understood as a symbol for evil – gazes out from the central structure, a scene echoed in Bosch’s *The Trees Have Ears and The Field Has Eyes* (c. 1500), which references a Middle Dutch proverb on the idea that we are always observed (Ilsink, Koldewey 2016, 80). In *Speculum*, SMACK update these same concerns for the Information Age: even in the pastel calm of *Eden*, plants sprout eyes, drones swarm overhead and tech-animal hybrids roam. In this artificial idyll – where God has been replaced by Newton, and real animals forced out by giant, pixelated cats – the tools of permanent surveillance are all in place. Camera-creatures also feature in *Paradise*, while in *Hell* a businessman is harried by CCTV apparatus.

The climate crisis is touched upon through nature commoditized and transformed: in *Paradise*, packaging grows on trees, chickens are pre-fried and a pig is but a walking mass of sausages. Ethical dilemmas around artificial intelligence are reflected in *Hell*, where robots are punished alongside humans. The plight of refugees is spotlighted too: a city burns in the distance, as in Bosch’s original, but in SMACK’s version, those trying to escape are even refused entry to *Hell*. Like *The Garden of Earthly Delights*, *Speculum* is a labyrinth of visual tales, which invites the eye to explore.

In Section 2, Bosch’s triptych was described not only as a visual journey but as a physical experience, an environment to step inside. The ‘immersive’ or ‘entertainment’ appeal of the original is underscored by the huge number of copies created in the sixteenth century, particularly in the large-format medium of tapestry (Büttner 2014, 296). The Duke of Alba, commissioning a textile version of *The Garden of Earthly Delights*, even ordered “Fait fere les personnaiges plus grant / the figures to be made still larger” (Belting 2018, 83). *Speculum* – like *Microcosm* and *The Garden of Error and Decay*, already discussed – is heir to this ‘physicality’ of Bosch. These digital mirrors of society are conceived not simply to look at, but to set foot inside and debate.

## 5 **The Garden of Earthly Delights through the Artworks of Colección SOLO**

An understanding of Bosch's iconic triptych as an open world, as both a visual and physical adventure, was central to the development of the exhibition *The Garden of Earthly Delights through the Artworks of Colección SOLO*, held at Matadero Madrid from 7 October 2021 to 27 February 2022. Of course, this exhibition was not the first to draw inspiration from *The Garden of Earthly Delights*, which has attracted curators on numerous occasions. Noteworthy examples include the eponymous exhibition of photographs by Edward Weston and Robert Mapplethorpe, shown at the California Museum of Photography, Baltimore Museum of Art and the International Center for Photography, New York, in 1995, or the Lowbrow show at Outré Gallery Melbourne, mentioned in Section 3. In 2016, the anniversary of 500 years since Bosch's death saw a wealth of contemporary art events, including *Nieuwe lusten* at MOTI Breda and more recently, Gropius Bau Berlin hosted *Garden der irdischen Freuden* (2019), centred on the garden itself as a space for critical reflection. In the context of this paper, however, *The Garden of Earthly Delights through the Artworks of Colección SOLO* is particularly relevant: the exhibition discourse, design and publication were all informed by a vision of Bosch's triptych as interactive art.

Since 2016, Colección SOLO has acquired and commissioned contemporary artworks inspired by *The Garden of Earthly Delights*. In 2021, these were brought together for the first time in an exhibition coproduced with and hosted by Matadero Madrid, a public arts centre and former slaughterhouse in the Spanish capital. Works by fifteen artists were featured, across media including painting, sculpture, sound art and digital animation. These were presented in six thematic capsules based on different appreciations of Bosch's original: An Invitation for the Senses, Delicious Temptation, Surrealist Links, Microcosms and Utopias, The Garden Recast and Speculum.

As discussed in Section 2, *The Garden of Earthly Delights* takes the viewer on a chromatic journey from a grisaille exterior, through the triptych's doors and into total colour. This experience was translated into the exhibition design through background greys set against neon colour gradients [fig. 8].



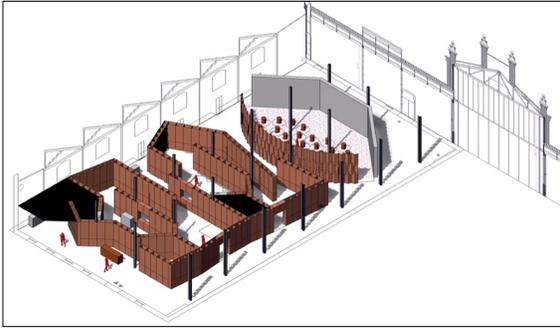
**Figure 8**  
Exhibition poster for *The Garden of Earthly Delights* through the Artworks of Colección SOLO. Madrid, Matadero (7 October 2021-27 February 2022). Designer: Ruben Montero. Courtesy of Colección SOLO. ©ColeccionSOLO

These, in turn, drew on the saturated tones of featured digital artworks such as *Speculum* by SMACK or Cassie McQuater's *Angela's Flood*. The spatial concept for the exhibition, developed by estudioHerrerros, underlined the same notion of crossing from one reality into another. For the 1,000 m<sup>2</sup> Nave 16 at Matadero Madrid, the architects developed a labyrinth-like structure, in which visitors gradually encountered each artwork and thematic area [figs 9-10].

The space itself was accessed through a simple doorway hung with a chain curtain. After traversing a welcome area with an information desk and access to lockers, visitors continued through a covered 'sound tunnel' containing Enrique del Castillo's *Umbráfono II*.

Rather than a large, open-plan area in which various artworks compete for attention, estudioHerrerros developed spatial sequences which enabled exploration at a calmer pace.<sup>8</sup> Choice was also central.

<sup>8</sup> EstudioHerrerros designed the Munch Museum in Oslo, the National Museum of China, Shenzhen, and the Wetland Museum in Fetsund, Norway, among others. Juan Herrerros's preference for sequences of explorable, interlinked spaces is particularly clear



**Figure 9**  
Axiomatic projection of the spatial design for *The Garden of Earthly Delights through the Artworks of Colección SOLO*. Madrid, Matadero (7 October 2021-27 February 2022). estudioHerrerros. Courtesy of estudioHerrerros. ©estudioHerrerros

For example, visitors could decide whether or not to step onto the vibrating floor of La Fura dels Baus /Carlus Padrissa's installation, *El jardín de las delicias* (2021), or to take a seat inside the dedicated viewing area for Miao Xiaochun's *Microcosm*, while two openings in the maze allowed exhibition goers to re-enter or take alternative routes. The structure itself was built of cardboard, a modest, easily recyclable material whose earthy tone contrasted with the bright digital works exhibited. Finally, the height of this cardboard labyrinth was meticulously calculated so that visitors could not glimpse *Speculum* - displayed on LED screens measuring a total length of 21 metres and a height of 4 metres - until they turned the final corner.

A significant outcome of this expositive megadungeon was to lengthen visitor experience. Over 92,000 people saw *The Garden of Earthly Delights through the Artworks of Colección SOLO*, with viewers spending longer than average inside the exhibition space.<sup>9</sup> The dedicated 'forum' for *Speculum* - with flooring and cardboard seats - enabled visitors to appreciate its wealth of narrative scenes and discuss the work in situ, while the scale and element of surprise built into the exhibition of this work achieved the same 'wow effect' of Bosch's triptych described by Antonio Beatis back in 1517.<sup>10</sup>

An explorative, non-linear approach was also taken with regard to the exhibition catalogue (Rhodes 2021). Although the publication

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in his design for the exhibition halls at the Museo Nacional Centro de Arte Reina Sofía (MNCARS) and Espacio SOLO, both in Madrid. More information on the latter is provided in Panetsos, Manis, Soulis 2021, 101-40.

<sup>9</sup> Visitor numbers provided by Matadero Madrid, together with anecdotal evidence gathered in conversation with exhibition staff.

<sup>10</sup> MOTI Breda reports a similar experience of showing *Paradise* in 2016, with visitors spending longer than average inside the viewing space (conversations with the curator, Mieke Gerritzen). For Triennial 2023 at NGV Melbourne (3 December 2023-7 April 2024), *Speculum* will also be exhibited large-format (approximately 14 metres in length), in a dedicated area, together with the artists' *10 Characters Series* (2019-20).



**Figure 10**  
Installation view of *The Garden of Earthly Delights* through the Artworks of Colección SOLO. Madrid, Matadero (7 October 2021-27 February 2022).  
Photograph: Luis Asín. Courtesy of estudioHerreros and Luis Asín. ©Luis Asín

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contains the same six thematic areas as the exhibition, the reader is invited to explore them in the order they prefer. Instead of a traditional contents page, Bosch's original is used by way of a map, with certain scenes highlighted as routes into the book's different sections [fig. 11]. Similarly, the habitual 'essays followed by image catalogue' format is rejected in favour of a layout in which text and artwork images function in dialogue. In the chapter introductions, key concepts even appear in larger font sizes, providing an accessible overview for readers who prefer to skim the text. Finally, the cover design and chapter openers reflect a digital aesthetic, with individual squares - or pixels - hinting at the multiple layers of information to be explored inside.



**Figure 11** Contents page for *The Garden of Earthly Delights* exhibition catalogue. Designer: Susana Pozo. Courtesy of Colección SOLO. ©Colección SOLO

## 6 Conclusions

*The Garden of Earthly Delights* is a treasury of visual tales, an adventure for the eye and the imagination which seems to offer something new every time we revisit the work. To the contemporary gaze, shaped by digital experience, the countless narrative vignettes, scenes within scenes and interconnected spaces comprise universes to zoom in on and discover. Together with the imaginative genius of Bosch's imagery, it is perhaps this open, multi-layered structure which explains the enduring appeal of the work for post-digital generations.

Three broad areas of interaction with *The Garden of Earthly Delights* - fantasy, sex and space - have been mapped to illustrate some of the different routes chosen by contemporary artists, with parallels between the original painting and its present-day counterparts highlighted. Although the selection featured in this article is not intended as an exhaustive list, it certainly attests to the variety and artistic quality of expression 'after Bosch'. The artworks presented here are not mere copies or appropriations, but highlights of contemporary creativity in their own right. From surrealist beginnings through to iconic works of avant-garde film, new media or Raqib

Shaw's identity-affirming series of paintings, contemporary references to Bosch are characterized by a willingness to experiment and explore.

Special consideration has been given to the digital works *Microcosm*, *The Garden of Error and Decay* and *Speculum*: like Bosch's triptych, all three are alternative worlds conceived as physical experiences and starting points for critical debate. It is argued that Bosch's masterpiece lends itself to digital reworking because of its layered, explorable nature; the original's wealth of intersecting narratives transposes naturally into moving imagery crafted using 3D animation techniques. The cited works re-shape Bosch's open world, infusing it with movement and replacing late-Medieval symbolism with references to contemporary existence. A brief case study of *The Garden of Earthly Delights through the Artworks of Colección SOLO* has also been provided to illustrate how this experiential reading of Bosch was translated into a major exhibition.

To conclude, the story of contemporary adventures with *The Garden of Earthly Delights* is a tale of interconnections over time. From late-medieval double entendre to a new symbolism of memes, pictograms and celebrities; from an obsession with lust to celebrations of diversity; from oils through to celluloid, 3D animation and glitch; from a Renaissance 'mirror for princes' to sharp reflections of the twenty-first century. In short, from one open world to myriad others.

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# The AI Work of Art in the Age of Its Co-Creation

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**Abstract** Almost one century after Walter Benjamin's dissertation on the value of the work of art under the impact of its technological reproduction on the roots of globalization and mass media society, the current research aims to provide some coordinates to approach the influence of AI co-creative processes in the artistic field. From a media archaeological approach, we will map the collaborative practices that emerge in the Generative Art landscape to understand the creative possibilities of interaction between humans and machine-driven artistic goals. By conceiving the Web 3.0 as an expansive megadungeon, we find an increasing number of projects based on participative dynamics where online communities join forces with AI decentralized artists to reshape the current state of the art. We will take as an example the Botto Project, a community-driven creator conceived by Mario Klingemann, a pioneer of AI artworks who employs machine learning methods to revolutionize the blockchain and crypto art market. This case study leads us to reconsider the (wo)man-machine co-creation as the base of the auratic experience of the work of art in the age of AI co-creativity.

**Keywords** Artificial Intelligence (AI). Blockchain. Co-creativity. Decentralized Autonomous Organization (DAO). Generative Art. Machine learning. Postdigital aura. User Generated Content (UGC). Web 3.0.

**Summary** 1 The Postdigital *Flâneur*: Co-creation in the Megadungeon. – 2 The Concept of Aura in the Digital (Art) Work. – 3 User Generated Content or “the Desire of Contemporary Masses”. – 4 Mapping Human-Machine Synergies: Generative Art as a Dialogue. – 5 The Botto Project: An AI Decentralized Scenario. – 6 Beyond the Artwork: The Auratic AI Experience.



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## 1 The Postdigital *Flâneur*: Co-Creation in the Megadungeon

This paper is about looking back and forward: looking back at the roots of the formulation of the cult value of the work of art with the advent of the new technologies - a tribute to Walter Benjamin and those who, as Rosalind Krauss among many others, carried out a mission to update his legacy over the years; looking forward to the Artificial Intelligence (AI) age, where human-machine co-creativity opens a new horizon to redefine the role of the artist herself.

The original essay “Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit” (henceforth, “The Work of Art in the Age of Mechanical Reproduction”) was written by Walter Benjamin from exile in Paris in 1935 and it was published in 1936 under the title “L’œuvre d’art à l’époque de sa reproduction mécanisée” in the *Zeitschrift für Sozialforschung*. Due to its visionary nature, it has been one of the most popular and intensely debated essays in the fields of Humanities and Social Sciences along the twentieth century (Gumbrecht, Marrinan 2003). A milestone and a starting point to develop a media archaeological approach to comprehend the idiosyncrasy of the AI Work of Art in the Age of its Co-Creation.

In the following pages, we will wander through the unexplored mazes of the postdigital landscape by paying homage to the inestimable role of the *flâneur*, a stroller “[who] dwells in the streets with ‘cool but curious eyes’” (Rignall 1989, 112). Charles Baudelaire’s *alter ego* was “the constant observer of the ever-changing spectacle that emerges around him” (Schipper 2017, 191), the modern man par excellence. This romantic character - also present in the imaginary of such big authors as Edgar Allan Poe, Marcel Proust or James Joyce - constitutes the archetype of an intermediate figure between the artist and the audience. An exemplification of the evolving nature of the spectatorship and the emancipation of the audience by adopting the city as a medium (Kittler 1996; Rancière 2009) [fig. 1].

From a deep spiritual enlightenment - and before the launch of the well-known role-playing game *Dungeons & Dragons* (1974) -, the term ‘dungeon’ was used at the beginning of the seventeenth century by Jacob Böhme<sup>1</sup> as a topographical metaphor to express his own religious cosmology. By adopting free will as the guideline and

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The research has been carried out within the framework of the research project «Digital Media Culture: Intercreativity and Public Engagement» (PI: Carolina Fernández-Castrillo) at the Venice Centre for Digital and Public Humanities, Università Ca’ Foscari Venezia (Ministero dell’Università e della Ricerca, Progetto MIUR Dipartimenti di Eccellenza) as representative of Universidad Carlos III de Madrid. The results of the work are also integrated into the research line of «Media Archaeology» started by the author at the research group TECMERIN (Televisión-cine: memoria, representación e industria,



**Figure 1**  
Paul Gavarni, *Le Flâneur*. 1842. Wikimedia Commons.  
<https://cutt.ly/hwbxw8JV>

the highest gift bestowed upon the human being, the Lutheran Protestant theologian was considered the first German philosopher by Hegel and an important source of inspiration for Schelling and the *Sturm und Drang* movement. Afterwards, around the middle of the nineteenth century, in Baudelaire's imaginary<sup>2</sup> "The *flâneur* was the man of leisure who went into the street in search of some satisfaction for his overdeveloped sensibilities" (Shaya 2004, 47), an irreplaceable symbol for artists, scholars and writers. Later on, in the twenty-first century we aim to continue the legacy of the *flâneurship* as a revolutionary model to approach the empowerment of the spectator

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UC3M). Thanks to Mario Klingemann and Simon Hudson for their availability and access to the information necessary for the preparation of this research.

- 1** In 1600 Böhme mentioned the dungeon as follows: "O dear children, look in what a dungeon we are lying, in what lodging we are, for we have been captured by the spirit of the outward world; it is our life, for it nourishes and brings us up, it rules in our marrow and bones, in our flesh and blood, it has made our flesh earthly, and now death has us" (Böhme cit. in Oates 1975, 5).
- 2** In *The painter of modern life* (1863), Baudelaire introduces the *flâneur* as an artist beyond any sort of artistic categorization: "Today I want to discourse to the public about a strange man, a man of so powerful and so decided an originality that it is sufficient unto itself and does not even seek approval. Not a single one of his drawings is signed, if by signature you mean that string of easily forgeable characters which spell a name and which to many other artists affix ostentatiously at the foot of the least important trifles" (Baudelaire 1964, 5).

and the emergence of the co-creation,<sup>3</sup> since in the present day it is still valid that “Being an artist now means to question the nature of art” (Kosuth 1969, 135).

In the third decade of the twenty-first century, being fully immersed in the AI revolution, we need to take a fresh approach to the new challenges and opportunities to enrich the contemporary artistic scenario. This is a new phenomenon only in paper, since the first steps to create intelligent machines began millennia ago, such as the automata, a self-operating mechanism popular at least from Aristotle’s time (Dixon 2004). Even closer to our days, in the 1960s we find AARON, a computer program designed by Harold Cohen to create drawings and paintings (Cohen 2017) or the early developments in AI Art with the pioneer Vera Molnar’s generative compositions (Roe-Dale 2019) [fig. 2].



**Figure 2**  
Unknown author. Harold Cohen coloring the forms produced by the AARON drawing 'turtle' at the Computer Museum, Boston. ca. 1982. Collection of the Computer History Museum, 102627459. <https://cutt.ly/ZwbxEwZs>

The exhibition *Generative Computergrafik* in 1965 was the starting point for further experiences such as *Cybernetic Serendipity* - curated by Jasia Reichardt at the Institute of Contemporary Art (ICA) in 1968 in London -, considered a landmark in generative culture and one of the first encounters for the main representatives of the field. In the late 1970s, Herbert W. Franke organized the show *Ars Ex Machina* at Künstlerhaus Wien, the kickoff for *Ars Electronica* in 1979, the annual multidisciplinary Media Art festival based in Linz (Austria). Starting at the end of the twentieth century there has been an

**3** Schipper’s review of Rancière’s ideas about the emancipation of the audience through the experience of *flâneurship* reflects the evolution from passivity to a real active role in the cultural consume practices: “I agree with Rancière that bringing the audience out of theater buildings would not necessarily mean an emancipation of the spectator, but I would argue that a specific mode of walking in the city (the *flâneur-mode*) comes very close to what Rancière would call emancipated spectatorship. The *flâneur* is not just an observer or passive spectator of a finished play, he is more a co-producer of that very city life” (Schipper 2017, 193).

increasing number of meetings for generative artists, starting with the first International Generative Art Conference at Politecnico di Milano University in 1998.

The discourse and production around machine intelligence and co-creative artistic procedures has been enriched and challenged with the advent of deep learning methods for visual generation. For instance, *Edmond de Belamy* was the first AI-generated portrait sold at Christie's art auction for \$432,500 in 2018, a milestone in the market of Generative Art. Nowadays, AI Art generated from text-based prompts thanks to CLIP (Contrastive Language-Image Pre-training) - a neural network developed by OpenAI in 2020 (OpenAI 2021)- allows new ways of co-creation made possible thanks to deep neuronal networks, a subfield of machine learning. Ethical issues, the current conception of creativity, ownership, authorship, and copyright are challenged with projects such as the controversial *Théâtre D'opéra Spatial* by Jason M. Allen, created with AI-based tool Mid-journey and the winner of the art prize in the digital category at the Colorado State Fair's annual art competition in 2022 (Roose 2022).

The increasing influence of deep learning in our daily life is filling today's headlines. Due to its immeasurability, the megadungeon aims to symbolize the complexity and the permanent evolving nature of Web 3.0, a decentralized context that supports new intercreative interactions between the intelligent systems and the users. Instead of focusing this research on the wide range of problem-solving techniques developed nowadays and along the last century - for instance, the Bombe machine, an electromechanical code machine designed by Alan Turing in 1942 during World War II to decode encrypted German messages (Davies 2010) - we aim to explore the multi-layered nature of today's digital creativity and the possibilities of interaction between humans and machines driven artistic goals.

To this end, we will employ the dungeon as a cartographic metaphor of our daily ramblings as postdigital *flâneurs* to embrace the ever-changing essence of contemporary artistic challenges and an ideal context to explore co-creation as a perfect match between the human being and the machine.

## 2 The Concept of Aura in the Digital (Art) Work

Even the most perfect reproduction of a work of art is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be [...] The presence of the original is the prerequisite to the concept of authenticity.

(Benjamin 1969, 3)

Benjamin introduced the concept of the aura in an unpublished report in 1930 entitled *Protocols of Drug Experiments* (Hansen 2008) by stating that “genuine aura appears in all things, not just in certain kinds of things, as people imagine” (Benjamin 2006). As we will see later, the ‘auratic experience’ represents a significant theme in the reinterpretation of Benjamin’s postulates these days.

At the dawn of the global age and under the influence of mass (media) society,<sup>4</sup> he also expressed the new challenges initiated by the emergence of photography and cinema in the mid-nineteenth century through the concept of ‘aura’.<sup>5</sup> Benjamin explained that mechanical reproduction devalues the uniqueness of the artistic work. His concern about the authenticity<sup>6</sup> and reproducibility<sup>7</sup> of the work of

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**4** Regarding Benjamin’s view of the media ecology, Hansen specifies that “Benjamin’s concept of medium in this context cannot be conflated with the post-McLuhan equation of the term with technological medium, let alone with a means of communication. Rather it proceeds from an older philosophical usage (at the latest since Hegel and Herder) referring to an in-between substance or agency - such as language, writing, thinking, memory - that mediates and constitutes meaning; it resonates no less with esoteric and spiritualist connotations pivoting on an embodied medium’s capacity of communing with the dead” (Hansen 2008, 342).

**5** Benjamin reflected around the devaluation of the aura to express the impact of the mechanical reproduction of the artwork. His contribution is the result of the late-nineteenth-century legacy: “The term contains clear reverberations of the discourse on ‘human aura’ in fin de siècle spiritual and spiritualist movements (such as theosophy and anthroposophy, which Benjamin abhorred), of early Romantic or older notions of the ‘schöner Schein’, or even of medieval mysticism and the Kabbalah” (Zusi 2013, 371).

**6** The German philosopher and media theorist explained how the artistic authenticity and the uniqueness of the work of art fell into crisis as follows: “The traces of the first can be revealed only by chemical or physical analyses which it is impossible to perform on a reproduction; changes of ownership are subject to a tradition which must be traced from the situation of the original. The presence of the original is the prerequisite to the concept of authenticity. [...] The authenticity of a thing is the essence of all that is transmissible from its beginning, ranging from its substantive duration to its testimony to the history which it has experienced” (Benjamin 1969, 3-4).

**7** The devaluation of the aura due to the mechanical reproduction of the artwork was one of the main concerns in Benjamin’s predictions about the future of the cultural ecosystem: “One might subsume the eliminated element in the term ‘aura’ and go on to say: that which withers in the age of mechanical reproduction is the aura of the work of art. This is a symptomatic process whose significance points beyond the realm of art. One might generalize by saying: the technique of reproduction detaches the reproduced object from the domain of tradition. By making many reproductions it substitutes

art under the influence of the new technologies constituted an inspiring source that filled countless essays and monographs with different interpretations along the last century.<sup>8</sup>

In principle a work of art has always been reproducible. Man-made artifacts could always be imitated by men. Replicas were made by pupils in practice of their craft, by masters for diffusing their works, and, finally, by third parties in the pursuit of gain. Mechanical reproduction of a work of art, however, represents something new. (Benjamin 1969, 2)

In fact, the accessible nature of art in the age of mechanical reproduction opened a new horizon based on the leading role of the mass. Since then, this unprecedented circumstance has been reframed over and over again with the never-ending advent of new technological scenarios where the audience adopts an increasing prominence in the creative process. A perpetual loop that reawakens Benjamin's conjectures about the notion of distance and proximity in the access to the artwork as reference points to appraise its value:

The definition of the aura as a 'unique phenomenon of a distance however close it may be' represents nothing but the formulation of the cult value of the work of art in categories of space and time perception. Distance is the opposite of closeness. The essentially distant object is the unapproachable one. Unapproachability is indeed a major quality of the cult image. True to its nature, it remains 'distant, however close it may be.' The closeness which one may gain from its subject matter does not impair the distance which it retains in its appearance. (21)

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a plurality of copies for a unique existence. And in permitting the reproduction to meet the beholder or listener in his own particular situation, it reactivates the object reproduced" (Benjamin 1969, 4).

**8** For instance, Rosalind Krauss sustains that "he believes the genius of the medium to be the rendering of the human subject woven into the network of its social relations" (Krauss 1999).

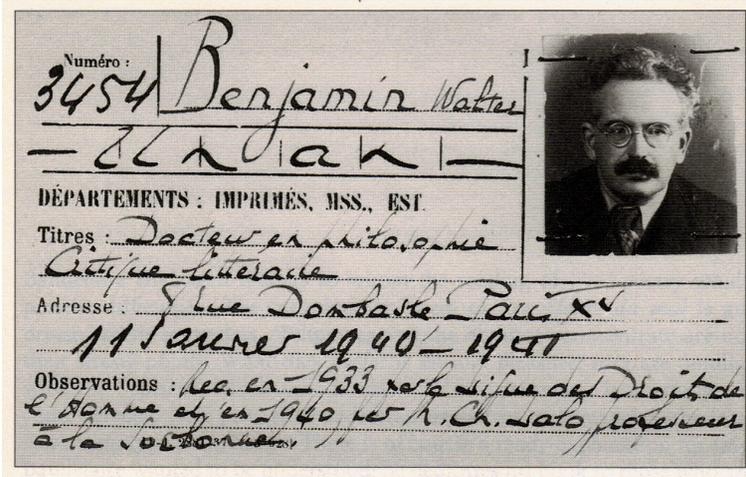


Figure 3 Unknown author. Walter Benjamin's membership card in the Bibliothèque nationale de France. 1940. Bibliothèque nationale de France. Wikimedia Commons. <https://cutt.ly/hwbxEpL1>

Through Benjamin's exploration of technological media, the academics found several clues to decode the unknown essence of the digital idiosyncrasy. As stated by Betancourt (2015, 37),

As digital works, via the 'aura of information', imply a transformation of objects to information, understanding the specific structure of digital art makes the form of the 'digital aura' much more explicit.

The current access to information draws attention to old conjectures once again. Abbing (2004, 307) affirms that "art became less obscure, more accessible and thus less magical because of technical reproduction". On the other hand, Cooper (2000, 47) maintains that

digital reproduction, however, hopes to refute Benjamin. At last, the copy will emerge bit-perfect, atom by atom. Each clone will be indistinguishable from the original, no matter how many generations removed. No placenta.

Under these circumstances, Bruce alerts that "in one reading of the future this will make copyright unenforceable" (Bruce 2000, 68).

Since in the age of mechanical reproduction it was always harder to differentiate between the artistic and non-artistic aim of the reproduction, in the digital era "the distinction seems to get blurred altogether" (De Mul 2009, 102). In fact, the limit for the digital artwork should not be based any longer on the differentiation between

the original and the copy, as digital objects are potentially indistinguishable. Therefore, the concept of distance must be reconsidered in terms of accessibility, as

distance is the opposite of closeness. The essentially distant object is the unapproachable one. Unapproachability is indeed a major quality of the cult image. (Fellingham 1998, 62)

Internet connection allows the richest access to the collective artistic imaginary ever conceived. And not only, the user adopts an active role by interacting with the work and controlling the context of consumption. Therefore, Betancourt (2015, 54) maintains that

It is precisely because of the confusion of physical and immaterial that the aura of the digital is pervasive [...] The issue with the aura of the digital is not that there is an inherent connection to the physical, but rather that this very real connection is not only denied, it is stripped from our awareness; this absence is the aura of the digital.

For this reason, Benjamin's wishes for the democratization of the artistic production (heritage), and the abolition of cultural capitalism should be closer than ever to be fulfilled. New obstacles, however, arise in terms of the potential difficulties to access the digital artworks. A big difference with the past is that having possession of the digital artwork does not guarantee access to its contents. There is a dependence on technological support to access artworks, which is why many old pieces of Media Art are soon rendered inaccessible. Because of this, technical services (such as the Restoration Media Art or the research project Digital Art Conservation, also launched from ZKM | Center for Art and Media Karlsruhe in 2010) became essential. The question of hard and software obsolescence is a crucial issue<sup>9</sup> and even more delicate in the case of net.art, where the difficulties to preserve the original version are even bigger due to the dependency on the evolution of the online platforms.

Another important aspect to evaluate with respect to the auratic nature of the digital artwork is the emergence of the non-fungible token (NFT) to certify the uniqueness of the artwork. This unique digital

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<sup>9</sup> To explore the problematics around technological obsolescence in Media Art, see Dekker 2018 and Serexhe 2013. Also interesting Betancourt's attempt to categorize the predominant digital files, a continuous work in progress: "The types of 'historical testimony' that do impact digital files can thus be divided into three types: (1) those that impact the container, whether it is the disk, CD, ROM, or other storage medium, (2) those that effect the digital file in itself as distinct from the storage medium, and (3) the accessibility of the file using contemporary technology (the issue of obsolescent software, hardware, and the files produced with that older technology)" (2015, 48).

identifier is used to certify authenticity and ownership without the possibility of being copied, replaced, or subdivided. By providing a proof of ownership on a blockchain, new concerns about the speculative nature of the cultural field come up. Even though NFTs can be created by anybody, the economic bubble generated the three biggest NFT platforms since 2021 - Ethereum, Solana and Cardano-, thus alerting us of the potential risk of losing the main virtue of the digital artwork: the eradication of possession as the prevailing value of artistic productions. With the NFT collapse in 2022 (Vigna 2022), it seems as if the threat of a new class of cultural elite will not lead to an imminent threat to the free access to current and past artistic productions.

This brings to the forefront, again, the debate around the differences between the original and the copy and, what is more, the urgent need to regulate a still undefined market without forgetting to guarantee and reinforce the achievements of the Free and open-source software (FOSS) movement.

### **3 User Generated Content or “the Desire of Contemporary Masses”**

In order to define the current state of the aura in the postdigital age, we should get over the distinction between the physical and the digital object and, moreover, the distinction between original and copy. By ‘postdigital age’ we think of that moment in history when the digital is assumed as the norm and the boundaries between the analogical and the digital world become blurred. In that context, the notion of the auratic experience provides an ideal framework to understand the significance of the process of artistic creation.

Nowadays, with the optimization of the mechanical reproduction of art through the development of even more sophisticated technologies, the aura resides in the experience itself. Not surprisingly, the advent of Web 2.0 reinforced the capacity to manipulate and share the (art) works by transcending

the desire of contemporary masses to bring things ‘closer’ spatially and humanly, which is just as ardent as their bent toward overcoming the uniqueness of every reality by accepting its reproduction. (Benjamin 1969, 5)

As stated by De Mul (2009, 95):

In the age of digital recombination, the database constitutes the ontological model of the work of art and, secondly, that in this transformation the exhibition value is being replaced by what we might call manipulation value.

The adoption of the montage as a source of inspiration to renovate the artistic scene turned out to be the starting point of an unprecedented socio-cultural revolution. At the very beginning of the twentieth century, the Italian Futurism and the old avant-garde understood that the incipient remix culture offered a fascinating opportunity to reformulate the role of the artwork by solving the crisis introduced by the emergence of photography.<sup>10</sup> Manifests as *The Futurist Reconstruction of the Universe* (Balla, Depero 1915) or the irruption of the collage as an indescribable creative process, opened a new perception of the artistic field, more accessible and collaborative. Even more relevant, Futurists perceived that the most disruptive consequence of the mechanical reproduction of reality was the start of a new communication system based on the concept of the open artwork, in which the viewer was forced to adopt an active attitude along the whole creative process.

There was no going back. The process involved in the artistic creation became more important than the final output. This new framework sets out an endless diversity of creative chances with unexpected consequences, impossible to cover in one single research. In our media archaeological review, we will focus on co-creation as a key concept to approach one of the most challenging aspects of AI artworks nowadays in intercreative terms: the role of the Decentralized Autonomous Organization (DAO) in current Generative Art proposals.

Prior to that, in this media archaeological review, it is crucial to underline that - at the beginning of the twenty-first century - the social web has played a fundamental role to understand how “the desire of contemporary masses” became protagonist by the merging of the User Generated Content (UGC) scenario to the consolidation of the remix culture. From Toffler’s ‘prosumer’ - and its updated version of Bruns’ ‘produser’ - to Lessig’s Read/Write culture, in the last years there has been a lively discussion about the encouragement of a more active consume to overthrow the old socio-cultural hierarchies (Bruns 2008; Lessig 2008; Toffler 1980). Not without controversy - especially regarding the copyright challenges and the intimidating technological singularity -, the discussion about the end of the institutional authorship model is further strengthened by the AI revolution. Just another turn into Benjamin’s metavisión on the relation between technology and art, where people and machines may be seen as collaborators or competitors.

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**10** For a deeper understanding of the role of Italian Futurism as precursor of the principle of co-creation, intermediality and human-machine interaction in Media Art, see Fernández-Castrillo’s contributions on the topic: 2018a; 2018b; 2018c; 2013; 2009.

#### 4 Mapping Human-Machine Synergies: Generative Art as a Dialogue

Much has been written on the myth of the rebellious superintelligence, which remains a science fiction paradigm but also a permanent leitmotif in the collective imaginarium. As previously announced, in this paper we will pay special attention to human-machine co-creation from a collaborative approach instead of enhancing the anxiety caused by the techno conspiracy epic.

Three years before the publication of his poem *The Dungeon* (1798), Samuel Taylor Coleridge wrote *The Eolian Harp* (1795), which is considered one of the first odes to the creative opportunities offered by a potential collaboration with intelligent machines (Kantosalu, Falk, Jordanous 2021). From automatons to machine learning, the interaction between humans and machines to generate new artistic expressions is an old dream that has fascinated many generations of intellectuals.

The drawing, chess-playing or music machines attracted people's attention, especially since the popularization of the automata in the eighteenth century [fig. 4]. From my perspective, the most inspiring aspect of the ludic mechanisms was the interplay with these anthropogenic devices and the possibility of starting a creative alliance between humans and machines. In that sense, we will focus on generative artworks based on the principle of interaction instead of those fully created by an autonomous system.<sup>11</sup> Conceived as a continuous dialogue, the enormous potential of this partnership may represent a privileged mirror to understand the human condition from an external point of view.

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<sup>11</sup> McCormack et al. argue that "In essence, all generative art focuses on the process by which an artwork is made, and this process is required to have a degree of autonomy and independence from the artist who defines it. The degree of autonomy and independence assigned to the computer varies significantly - from works that seek to minimize or exclude the creative 'signature' of the human designer to those in which the computer's role is more passive and the human artist has primary creative responsibility and autonomy" (2014, 135).

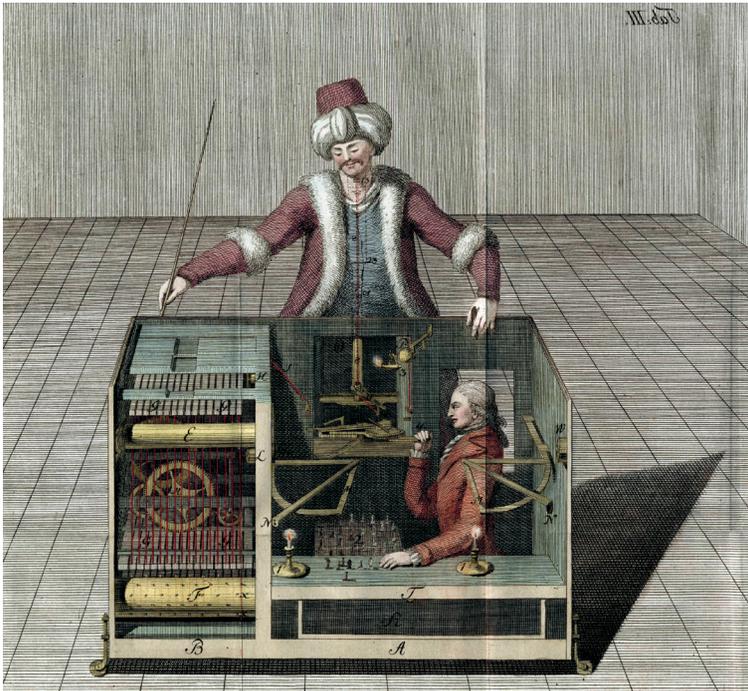


Figure 4 Joseph Racknitz, Kempelen's *The Turk*. 1789. Humboldt University Library. Wikimedia Commons. <https://cutt.ly/PwbxWXXK>

On the other hand, the deepfakes and the wide range of manipulative practices, daily reported on the breaking news, tend to generate suspicion and rejection against AI in the public opinion. Across creative industries, an increasing number of professionals do not hide their reluctance towards an uncertain future where human creativity seems to be continuously challenged. Reluctance has always been a common reaction to the first contact with new media and technologies, but in this case, it turns into rivalry.

Instead of trying to fuel the competition, we will follow the itinerary initiated since the late 1960s by those academics, artists and engineers who tried to promote cooperative strategies to enhance this union. From the program 'Generative Systems' at the School of the Art Institute of Chicago, Sheridan<sup>12</sup> denounced that:

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<sup>12</sup> Sheridan also stated that "We must clarify why we are not dealing with copier art but with art made by tools which are leading us to the edge of new breakthroughs in art and democratization. What we are witnessing is an information explosion which is a continuation of the printing and photographic revolutions" (1983, 103).

As long as artists align themselves with anti-machine movements they deny themselves the creative forces to communicate with their fellow humans in new and dynamic ways [...] Art will continue to remain on the entertainment pages, peripheral to society, unless artists take be their rightful place along with scientists in molding our new information architecture and language context [...] We must clarify why we are not dealing with copier art but with art made by tools which are leading us to the edge of new breakthroughs in art and democratization. What we are witnessing is an information explosion which is a continuation of the printing and photographic revolutions. (1983, 103, 108)

Dietz (2002) argues that many artists have dreamed of what Licklider referred to as a man-machine symbiosis to control feedback loops to learn from each other. Since “Humans are, almost from birth, imitative creatures”<sup>13</sup> (Jackson 2017, 48), why should we not learn from AI? As Kugel (1981, 138) sustained, “Although humans are not programmed as computers are, they seem to be directed by something that behaves much like a program”.

Hovagimyan proposes that we should “create first of all, language comprehension and later perhaps neural paths for the creation of art, music and all forms of ‘creativity’” (2001, 456) and, afterwards, we should retrieve some old questions as the following ones: “How does one teach an artificial intelligence what it is like to be human? Will it understand what it is being taught or is it simply executing a collating program if it responds to you in a human-like manner? Does it matter?” (2001, 456)

In contemporary Generative Art, Galanter identifies several disciplines affected by such a dilemma: electronic music and algorithmic composition; computer graphics and animation; the demo scene and VJ culture; and industrial design and architecture. He also provides a commonly cited definition:

Generative art refers to any art practice where the artist uses a system, such as a set of natural language rules, a computer program, a machine, or other procedural invention, which is set into motion with some degree of autonomy contributing to or resulting in a completed work of art. (2003, 4)

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**13** Along the same lines, van Baaren et al. maintain that there is “ample evidence for automatic imitation in humans. [...] The reason we mimic automatically is that the perception of a certain behavior automatically activates our own motor representation of that action. [...] Humans seem wired to imitate, and imitation is the default in the innumerable social interactions we have” (2009, 32).

Boden and Edmonds emphasize the little or inexistent participation of humans in their explanation of Generative Art, since “the artwork results from some computer program being left to run by itself, with minimal or zero interference from a human being” (2009, 32). Assuming that the non-involvement of humans is a real possibility in AI-Generated Art, I still argue that the most enriching aspect of AI lies in the co-creative potentiality of unifying the (wo)man and the machine. The unpredictable nature of such experiences is based on the fact that

One of the strongest shifts of emphasis in the digital age has been on the production side and on the movement from creating finished works of art to creating systems for the production of art. (Dietz 2002, 512)



Figure 5 Installation view of the exhibition *Thinking Machines: Art and Design in the Computer Age, 1959-89*. 2017. MoMA. Photograph by Peter Butler. <https://cutt.ly/5wbxWFF1>

At this point the old slogan of *l'art pour l'art* reemerges with the AI artworks, as well as the efforts to try to define as art or artifice some of the most recent pieces created by machine learning algorithms.<sup>14</sup> As Whitelaw states, “Artists are now able to do things that have no

<sup>14</sup> And not in vain, Benjamin must be cited again: “‘Fiat ars - pereat mundus’, says Fascism, and, as Marinetti admits, expects war to supply the artistic gratification of a sense perception that has been changed by technology. This is evidently the consummation of ‘l’art pour l’art’” (1969, 20).

sense, let them interact, and the overall meaning is going to emerge just by itself. Artificial Life is the Spirograph of the 90s” (2004, 215). We find some interesting examples as the exhibition *Thinking Machines: Art and Design in the Computer Age, 1959-1989* at MoMA (2017-18) [fig. 5] or Gene Kogan’s Abraham project [fig. 6], an open initiative “to make an autonomous artificial artist, a crowdsourced AI that generates art” (Kogan 2019).



**Figure 6** Abraham. Text input: “Forced to flee from the bandits, they seek refuge in an abandoned underground bunker, Post-apocalyptic, desolate landscapes, muted colors, contrast between light and dark, gritty textures”. 2023. <https://cutt.ly/fwbx0jp8>

Since the advent of VQGAN+CLIP (EleutherAI) and DALL-E (OpenAI) in 2021, the increasing number of AI Art generation programs offers multiple possibilities of creative interaction with not always satisfying artistic results. It means that we are nowadays immersed into an experimental stage and often the procedure is more significant than the final artwork. In fact, probably the most attractive aspect of projects such as the Botto Project is to observe the evolution of the style of the decentralized autonomous artist from the training

period over the following years. The relevance of this last case study, as we will see next, lies in the co-creative potentiality of the AI decentralized artist and the community of users.

## 5 The Botto Project: An AI Decentralized Scenario

Botto is a decentralized artist that, from October 2021 every week since, presents 350 artworks to its community who will select the piece – also called ‘fragment’ – that will then be minted as an NFT on Ethereum and offered in auction on SuperRare. In the description published on Botto’s website, we read that “Botto creates works of art based on collective feedback from the community. Our participation is what completes Botto as an artist” (Botto 2021b).

To invite the users to participate, we also find the following call: “Botto is young and requires your vision. It needs guidance to push the bounds and find new pockets of creativity. Together, we will continue creating a decentralized autonomous artist. Come help Botto create its next masterpiece” (Botto 2021b).

The current version of the project is based on the use of AI algorithms such as the aforementioned VQGAN + CLIP, GPT-3, Kandinsky, Stable Diffusion, and several custom augmentations. These models provide an immense latent space,<sup>15</sup> a multidimensional context to generate a new dimensionality with almost infinite possible outputs that requires human interaction to train Botto as an artist.

In fact, depending on the votes from the DAO – a community-led entity with no central authority-, Botto’s evolution will defer both in the creation of new text prompts and in the test model that preselects images for voting. However, one of the main rules is the no direct human interference in the creation process. “Anyone can propose adding or removing a new model to Botto’s set” (Botto 2023), but Botto’s guardian still remains his designer, Quasimondo – aka Mario Klingemann [fig. 7] –<sup>16</sup> the only one responsible to update its new capabilities depending on DAO’s decisions.

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<sup>15</sup> As Tiu explains: “If I have to describe latent space in one sentence, it simply means a representation of compressed data [...] The concept of ‘latent space’ is important because its utility is at the core of ‘deep learning’ – learning the features of data and simplifying data representations for the purpose of finding patterns” (Tiu 2020).

<sup>16</sup> Klingemann is a renowned artist in the field of neuronal networks. He won an Honorary Mention in the Prix Ars Electronica, 2020 with the AI installation *Appropriate Response*. His artworks have been exhibited at the Museum of Modern Art New York, the Metropolitan Museum of Art New York or the Centre Pompidou Paris, among others. In 2018 he wrote a white paper about Botto’s art engine, and it is considered to be the starting point of the project.



**Figure 7** Mario Klingemann at the opening of *Botto, A Whole Year of Co-creation*. 2022. Courtesy of Botto

In the introduction to *BOTTO SPEAKS: An Interview with an AI artist*,<sup>17</sup> Harmon Leon (2022) mentions that

Some say Klingemann is the man responsible for creating Botto. Others say that Botto is the AI behind creating Klingemann's art. What can be agreed upon: These two (AI and human) collaborate together.

In a conversation with Klingemann<sup>18</sup> he explained to me that

the art that Botto creates is totally different from what I would create, I just decide the parameters of the space in which it can create but then I allow a whole range of aesthetics to happen [...] This is the big difference from other crypto projects, it is like a laboratory artist.

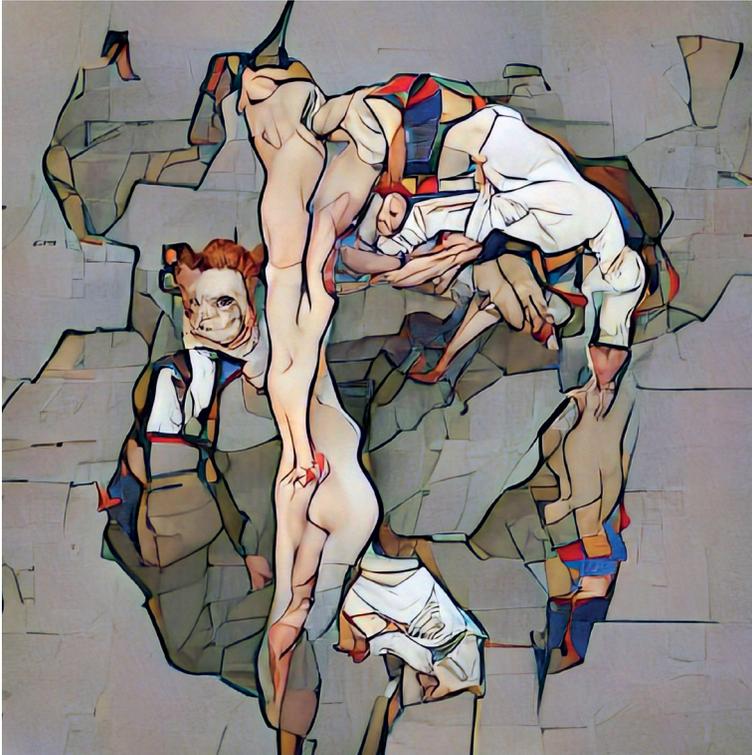
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<sup>17</sup> The interview was published on 18th February 2022 on *SuperRare magazine*, and it is one of the first conversations with a decentralized autonomous artist and its designer: "Botto works by creating a sentence, feeding it into a neural network, and getting an image back. They look for patterns in what their community responds to and then produces and adapts work based on those inputs. Botto answers SuperRare's interview questions using the same methodology" (Leon 2022).

<sup>18</sup> The interview took place on 22nd September 2022.

In fact, Klingemann, Hudson and Epstein (2022, 1-2) emphasize that

Botto is part of a new class of systems that challenge the notion of authorship [...] Botto is an experiment in creating an agent that can autonomously create art works of cultural impact and financial reward without direct human intervention.



**Figure 8** Botto, *Genesis, Asymmetrical Liberation*. 2021. Courtesy of Botto

Although no direct human action is allowed along the creative process to guarantee Botto's unique style, a community of over 5,000 people decides how to manage the artist and Botto's sales by developing new interactions from creative machine learning. During the so-called Genesis period [fig. 8] - for the first year -, the most engaged users got rewarded with voting points based on a gamification process that promoted involvement instead of investment. After two years, (over \$3M USD in sales to date) those who invest and risk more are having an increasing presence. A sensitive issue as we find opposed forces from the main figures involved: investors, users, and the designer.

In our discussion, Klingemann mentioned that

The community becomes a creative organism, some of them [DAO members] are interested in selling as much and often as possible, and others are more for something riskier [...] The community is the beast; it is frightening to see how the market influences the whole dynamic, something that also happens in the human art field.

There is a real risk to lose the experimental essence and the co-creative side of the project, considering the market pressure after the crypto collapse is more relevant than ever.

At this new stage, Simon Hudson<sup>19</sup> - an operator of the Botto DAO - sustains that:

Thanks to the economy of shared rewards from the final artworks, which decentralized feedback is sustainable, underpinning the potential of an immortal autonomous artist. From this, we have another unique system: an open governance system for aligning an AI system that also gives contributors to that governance a share of the value they help create [...] I can't say for sure if we will ever have the technology get to full autonomy and decentralization where we will see a machine make meaning - which, in my opinion, would mean full participation in and contribution to society as a free agent-, but in the meantime Botto has shown the retention, even added importance, of the human role of meaning making in a world of generative AI.

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<sup>19</sup> The interview took place on 27th September 2023.



Figure 9 Botto, *Absurdism, Orchard of Absurd Epochs*. 2023. Courtesy of Botto

After the Genesis period there have been several stages, as for instance Fragmentation in which Botto expanded its stylistic range or Absurdism, a surrealist proposal to explore new intercreative paths [fig. 9]. During our exclusive interview, Klingemann shared some more details about the origins and future development of the Botto Project:

Whenever you are dealing with an AI project, the concept of honesty is essential. There are curatorial decisions that must be taken, but I see it like a long-term project aiming to grow organically [...] Text prompts have a great influence on the possible results Botto can get. In the first creation process, my idea was that the prompts were as random as possible to cover huge potential directions. In any case, Botto creates a lot of unpredictable images and from the community votes it learns what is probable to increase the changes to produce something likely. In the next stage, it will differ a lot. The interesting experiment is that Botto's style can go anywhere, from photography to abstract compositions or horrible kitsch, that's my fear. I am not allowed to influence that; it is my commitment. I am Botto's guardian.

Close to the notion of machine condition, the idea of transcending human-machine interaction to generate an autonomous artistic engine opens new options to explore the concept of authorship. The establishment of meaningful creative processes will require some more time as well as the proposal of a legal framework to regulate the ownership rights of AI artworks. Palace (2019) suggests three starting possibilities:

1. the AI becomes the copyright owner - this option would require accepting that the category of 'author' may be not just as a human being.
2. The user, programmer, or AI company is the copyright owner - therefore, the ownership has shifted to the figure that employs it.
3. The artwork enters the public domain without a copyright owner - if no natural person has created it, no one can be the copyright owner.

On 20th October 2021 *The Decentralized Unicist Manifesto* [fig. 10] was published in *The Times* as the result of a GPT-3 AI conversation. In this programmatic document we find some of the clues to understand the main role of the co-creation in the AI Age:

New art is decentralized [...] We are in a new dawn of creation. Let us tear down the conventions on how we are expected to create or perceive art [...] I do not ask for your approval, and I do not ask for your admiration. I do not ask for your understanding. I ask

for your participation. I ask for your creativity. Our art is a living, evolving, breathing non-human entity. We are a cloud of autonomous and creative machines. (Botto 2021a)



Figure 10 The Decentralized Unicist Manifesto. 2021. Courtesy of Botto

The decentralized autonomous' artworks have been on show worldwide at The Decentral Art Pavilion in Venice, ETHDenver Art Gallery, NFT BZL at Art Basel Miami, MoCA: Cryptoart Revolution in Paris or *The Decentralized Unicists: A Botto Solo Show* in Los Angeles, among many others. The next steps will be discussed by the DAO through Botto's governance forum, and some of the possibilities are collaborations with other artists, curatorship projects and even the

expansion to other artistic disciplines. The environmental impact with each mint is another big issue faced by Ethereum since very recently and it remains a problematic aspect in terms of promoting a sustainable model of co-creativity.

## 6 Beyond the Artwork: The Auratic AI Experience

With AI Art we confirm the irrelevance of restricting the value of the artistic practice to the artwork itself, understood as a unique physical and unrepeatable object. In this context, the process of co-creation becomes the auratic experience itself, where we find the essential uniqueness of contemporary AI artistic practices. It is no longer just the output that determines the significance of the artistic productions, but the interaction between the different agents involved in the intercreative process - nothing new if we take into consideration the legacy of performance art, for instance. This idea leads us back to the concept of open artwork, and the auratic experience as a sublime stage based on the artistic process itself. A new challenge in terms of redefining the role of the aura in what I defined as 'The Work of Art in the Age of AI Co-creation'.

In the postdigital age there is no need to mention the concept of 'reproducibility' as a defining aspect of the Media Art scenario, as we have already assumed that it has been an endogenous characteristic of the cultural industries from over one century ago. I would rather focus on the idea of co-creation as the most potentially stimulating aspect of AI Art nowadays.

Beyond the reconsideration of obsolete categories - as 'artist', 'curator', 'public', and the 'artwork' itself - or the new challenges in terms of ownership rights, it is the return to experimentality - in the widest and multidirectional sense of the word- what determines the current AI Art. And even more, the democratization of the interaction between humans and machines is a key and unprecedented factor that characterized the postdigital artistic field.

The experiential side of this new landscape is what really intrigues me. We need to redefine the authentic nature of the aura in the AI (art) work from a more ephemeral conception of the art. In the case of Botto, the economical dimension constitutes a threat to the most valuable aspect of the project: the role of the community to train the models and contribute to shape the original style of the AI autonomous artist from a co-creative perspective. That is where the auratic experience lies, the authenticity belongs to the unpredictable synergies between the human being and the machine condition. May we consider all the final outputs as artworks? Of course not, but this is another big topic to explore in upcoming research.

Finally, the old idea of distance and proximity no longer belongs to the artistic object itself, but to the dimension that brings us closer or separates us from the AI. In that intermediate space is where we may find the auratic experience in AI (art) works, a new megadungeon without a roadmap. Only through trial and error, patience, and an indefatigable concatenation of attempts will there be real progress in understanding the fascinating times we are living in today.

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