Over their nearly 60-year history, video games have developed into a creative form providing entertainment as well as opening major social and theoretical topics. And no matter how problematic it is to defend video games using economic indicators, this business is a regular money spinner – last year’s revenues, for example, reached over $120 billion.

In short, video games need to be taken seriously. This is why it’s worth examining why and how video games might work as a tool of speculative thinking. What’s most intriguing about them is that despite seemingly having a lot in common with films or books, for instance, their system nature is unique.

Speculation in literature, film, or fine arts has been around for some time – either in the form of science fiction, philosophical literature, theoretical fiction or any overlaps of these genres. Their usual methods and devices include considering alternative scenarios for the future, out-of-the box thinking to understand the world and getting rid of restrictive human perspective.

Video games are underrated in this respect. First of all, as Cameron Kunzelman points out in The Click of a Button, besides being already present in Spacewar!, one of the first games ever (1952), science fiction imagination also offers a completely different arsenal of expressions and concepts. In this text, I will introduce several
games bearing a huge speculative potential while indicating possible paths for a further development or use of video games as a specific medium for exploring non-standard ways of thinking. In the context of design, highlighting video games’ speculative dimension represents a departure from the modernist theory of the totalizing design of complete systems. The games mentioned here show the richness of contexts in which designing (albeit futuristic, in this case) takes place and which include a much broader spectrum of entities aside from humans. I agree with Roman Novotný’s conclusion in the article Design in the Times of Post-Anthropocene (Design v době post-antropocénu): “Refusing the notion of a user as a purely human category is of strong emancipatory potential. Attributing agency to non-human actors might open a path towards a design practice involving not only humans. This would allow us to build design procedures that might eventually have perhaps the most valuable outcome – save our species from extinction and the planet from a destructive ecological disaster.”

Novotný invites us to think design as an inclusive discipline which goes beyond local and species boundaries. As in Benjamin Bratton’s multilevel model of Stack, which portrays the world as an assembly of many interconnected computational spheres (such as geological, urban or human) and attributes agency even to non-

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4 I proceed from Keller Easterling’s term “master-plan”; these are top-down, fixed design (mostly city planning) solutions. For example Keller Easterling, Medium Design (Moscow: Strelka Press, 2018).


human actors, Novotný calls for a design able to take into consideration both human and non-human entities. Video games might be fit for this purpose, in some respects even fitter than other media. Thanks to their unique formal characteristics. I will mostly focus on two: procedurality (to put it simply – games consist of rules which they use to create simulation) and immersive interactivity (games absorb and embed us in a feedback loop through their control interface). Both of these characteristics feature interesting ways to build sensitivity to different forms of being or thinking which can then show in design practice.

Procedural Rhetoric and Immersive Speculation

The game studies debate about a precise (or sufficiently comprehensive) definition of video games has not arrived at a satisfactory conclusion – as if video games, in comparison to other media, were using way too many registers of expressions. They are based on representation (audiovisual and textual) and can therefore be understood and read as signs, but at the same time they always stem from a specific social or material situation (and often subculture as well) and can therefore be interpreted from a sociological or media-theory perspective. Video games resemble sports in some respects, or literature and film in others. However, they are unique with respect to procedural rhetoric. Developed by theorist Ian Bogost, this concept identifies video games’ ability to transmit ideas through rule-based systems and their interactions. Bogost claims that aside from text, music or visuals, a message can be transmitted also through logic around which the game system is structured. When you build a church in a game to obtain bonuses for your army, it’s a reference to the pragmatic function of the church which is nevertheless already encoded in the game’s mechanism. What’s important in the speculative perspective is that procedural rhetoric highlights video games’ ability to abstract the real world and mold it into the form of algorithmized virtual reality.

Kunzelman offers a clue to connect procedural rhetoric with speculative thinking by examining the approaches of two theorists and representatives of two main speculation movements, Samuel R. Delany and Graham Harman. The former is associated with sci-fi and the creation of fictional worlds. According to Delany, speculation must be based on predefined rules and conditions to allow the whole fiction to grow. He works with basic prerequisites for the functioning of natural laws and social norms which can differ from the ones we are used to. Connecting procedural rhetoric, system design and relational reasoning is therefore an obvious choice. Allowing us not only to observe and decipher the rules of the fictional world (like in literature), video games also let us directly experience and manipulate these rules and reflect, in hindsight, on the reality experienced.

Kunzelman then posits a second type of speculation which is closer to the speculative turn in contemporary theory and philosophy: it’s about thinking the options beyond the edge of supposed human ability to empirically grasp the principle of reality, about stepping into the “big outside” which lies beyond Kant’s categories of understanding and has been off limits to critical examination for decades. Yet beyond the limits of the “scientifically” examinable there is in fact an important non-human world gaining gradually on relevance, with the climate crisis.

The role of video games in the context of speculation about the non-human or post-human world is similar to the context of contemporary art – interacting
with worlds adapted to experiencing the non-human makes us reflect on our own anthropocentrism. Even though video games can’t break free of the limits of human perception, they might become a tool to address these limits critically.

Aside from the option to manipulate speculative systems, video games also offer a direct, interactive experience which differs from the regular practice of fine arts (although there are exceptions). The strange phenomenal aspect of the interaction with the game (and how it draws us in) can be described as a sort of a “magic circle” the boundaries of which are permeable yet still easily encompass the horizon of the perceptible. Video game interactivity then creates, according to theorist Jesper Juul, “a unique feeling of shared responsibility” for what is happening on screen. In other words: games are engaging and allow us to go through a believable experience in the shoes of someone (something) else.

The games that I have selected for a deeper analysis use these specific formal features to varying extents. The post-anthropocentric city building game Lichenia shows best games’ ability to model different (future) organizations of human civilization through rule-based systems, while Every Creeping Thing uses the human-player interface to speculate about the perception of non-human organisms.

**Medium Design and Virtual Post-Anthropocene**

“The oncologist follows not only the tumor but also the chemical fluctuations in surrounding tissues. The architect sees not only buildings with shapes and outlines but also the matrix of activities that inflects them,” writes theorist and architect Keller Easterling in her essay Medium Design. In her slim book, she describes a specific, non-totalizing design perspective where an often invisible substrate of relations, the medium itself, plays the leading role. It’s less about individual items and more about their mutual relations. Medium design is a sort of a manifest of method, perspective or (design) modus operandi based on the author’s previous works. What particularly deserves a mention is her book Extrastatecraft, which, aside from other important topics (such as ISO standards and special economic zones), presents an alternative way of urban planning and design conceptualization. Easterling’s terminology in the book fits right in with the present text: she speaks of “switches” or “multipliers” instead of “buildings”, and of “city operating systems” instead of “urban planning” – these are networks of relations which consequently explain the expansion of design patterns (such as slums or unified suburban areas). No thing and no man is an island, even seemingly inanimate objects.

The speculative undertone of this notion of the city emerges in connection with the recent interest in post-anthropocenic thinking. Let’s take Benjamin Bratton, a design theorist, as an example. Bratton includes non-human actors’ defining activity in the layers of his planetary-scale Stack, a global computing infrastructure. Whether they are rocks or geological movements in the material substrate, or computer bots in the cloud or in the interface layer, Bratton calls for the emergence of such environments where design is co-created by both human and non-human entities. This position is most clearly expressed in his notion of the user category which includes not only humans but also robots in automated factories or organisms in natural ecosystems.

Similarly, “medium design” is a perspective allowing us to think these non/post-human relations. Refusing master plans, or pre-set design problem solutions, Easterling

10 The author of this concept is game theorist Johan Huizinga. According to the “magic circle”, play (still non-digital at that time) takes place separately from the rest of productive activities. See Johan Huizinga, Homo ludens. A Study of Play Element in Culture (Boston: Beacon Press, 1955).
12 See www.molleindustria.org/lichenia/.
13 See www.gamecenter.nyu.edu/projects/ every-creeping-thing/.
14 Easterling, Medium Design.
16 Bratton, The Stack.
favors a modular approach: fine-tuning the conditions and channeling the energetic, political or any other flows is her preferred way of doing things, rather than creating maps. The relational nature of her thinking offers many opportunities to have the non-human actors not only included, but also directly involved in the (design) process.

**Lichenia as a Speculative City-Builder Game**

City-builder games are a constant presence in the video game world. Whether it’s the megasuccessful series *Sim City* or its successor *City Skylines*, the genre of sandbox city-building video games represents an analogy (albeit problematic) of medium theory. Instead of reaching precise or only vaguely defined targets, the player’s main task is to understand the mechanisms, relations and flows inside the urban communities they build. This is one of those genres in which the above mentioned procedural nature of games is very tangible and visible – all one needs to do is to modify the transport network and observe the impact this change in the network of rules has on the rest of the city.

However, most of these games don’t encourage speculations about possible worlds too much. They are too laden with the modernist way of thinking and, above all, often firmly planted in the current ideology of growth, profit and anthropocentric control of nature. However, in his speculative work *Lichenia*, Paolo Pedercini uses the city-building genre in a completely different manner. That’s why Pedercini created this game – as a response to genre conventions laden with ideas and to general discussions about the post-anthropocenic world. And it shows incidentally (or most importantly) which specific forms the medium-design approach could take in video games.

*Lichenia* takes place in an unspecified future which has been struck by an environmental disaster. The player is confronted with a tile playing area presenting a half-dead landscape with traces of settlements, ruins of human cities, slowly expanding water and isles of vegetation creeping into the surroundings with the gradual regenerative process. The player has four, and by the end of the game up to seven, different tiles to place on the landscape. None of them represents a specific material, only a substrate or an element defined by its behavior in the real-time simulation which responds to the player’s interventions but somewhat unpredictably and independently of the player’s other activities. This is the first speculative, medium-design moment of the game: *Lichenia* is not about purpose-built buildings, but about creating the conditions of the system as such, i.e. the composition of the medium. No matter whether the green tile represents a forest, grass or just a general idea of organic matter or whether gray means a wall or a shopping center. What’s important is how, using Easterling’s metaphor, the post-anthropocene landscape operating system is programmed. With time, the player obtains futuristic materials or entities, such as plastic-eating bacteria or strange white tiles allowing for large-scale regulation of flows within the (eco)system. In a subversive gesture, Pedercini lets the player manipulate the medium in order to balance the various elements with the chaos represented by the slowly decaying ruins of both the destroyed civilization and natural disaster. The game’s top-down perspective remains, but instead of a pre-defined plan, it favors experimenting, chance, or creating limits for autonomous processes.
**Lichenia** is a speculative game also because it literally speaks about a different future, a post-human world requiring the renewal of a balanced ecosystem, so it fits right in with the current climate crisis debate. At times, partially generated short messages about the state of the world appear: a note about a found formation of old plastics ("A nice foam mattress formation") then a short reflection about humanity’s comeback ("What if we started destroying the world all over again?") However, I believe that the true speculative moment here does not lie in representation but in procedurality. **Lichenia** is an entertaining as well as a suggestive tool allowing us to rehearse both the non-human and the relational approach to design by manipulating an emergent system of rules. The play’s specific temporality then represents the cherry on the speculative cake. It’s not expressed explicitly in the game, but we can presume that, given the speed of action in the game’s (eco)system, it far exceeds the passing of anthropogenous time and is much closer to Siegfried Zielinski or Jussi Parikka’s “deep time”.

Pedercini’s **Lichenia** is therefore a good example of an accessible video-game speculation which, aside from a clear eco-political programme, also represents a space to test the post-human design approach in a way inherent only to interactive simulations. The neural network-generated graphics full of glitches and the narrative about the rebirth of civilization are a “mere” extension of a unique procedural model for a non-human world.

*Every Creeping Thing* and the Non-Human Experience

Alex Duncan’s experimental game *Every Creeping Thing* opens a completely different kind of speculation. Its objective is to simulate the life of different animal species in a very unique way – by depicting perception through their specific sensory apparatus. So in different parts of the game, the player becomes a fish, an insect and a larva. The camera perspective and the image change based on scientific findings on how each of these organisms perceives its surroundings. The game features not only specific vision characteristics (the fly has hexagonal vision, for instance), but also

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18 Aside from Lichenia, Pedercini’s another city-building game, *Nova Alea*, also deserves a mention ([www.molleindustria.org/nova-alea](http://www.molleindustria.org/nova-alea)). In this game, the player becomes a ruler of an abstracted city, a developer and a speculator with invisible real-estate capital.

19 See [www.gamecenter.nyu.edu/projects/every-creeping-thing](http://www.gamecenter.nyu.edu/projects/every-creeping-thing).
a graphic depiction of pheromones or instinctive orientation with mosquitoes above water or plant pollen appearing as well. But Duncan goes even further in simulating the non-human: during the game, the player must use the mouse to imitate the organism’s basic forms of locomotion, i.e. wave wings forward and backward, swim from side to side or slowly shrink and spring their bodies as a larva.

Every Creeping Thing provides a comprehensive sensory experience stemming from a computer interface-based imitation, a representation of the non-human world. And so players enter the speculation through their own body, i.e. they control the organism differently than when using a conventional keyboard. There’s no clicking, players are forced to mimic true animal movements.

The use of the game’s interface is a design problem. In comparison with Lichenia’s simulated system of rules, and with a little theoretical overstatement, Every
Creeping Thing is more about “phenomenal design”. It introduces a way of using the feedback nature of computer/video-game interface (which is always bidirectional because of the interaction between the human and the machine) to explore the possibilities of video-game conventions or the experience of species. With players embodying the different game organisms through their “phenomenal body”, Every Creeping Thing highlights the affective dimension of human and non-human sensory experience.\(^{21}\)

### Beyond the Boundaries of Species

There is a reason why game designers are one of the key video-game professions. Their traditional task is to design game levels, puzzles, combats and come up with game mechanics, or, in short, the principles of the game world – which is not far from designing the real world. But Lichenia goes even further. Pedercini lets players be part of the designing process of the new world. But similarly to speculative designers, players must approach this task without prior ideas of how things work and what should be the desired result. Thanks to its system nature, Lichenia allows us to see, in an abstracted form, what it’s like to design for an unpredictable, non-transparent and only indirectly influenceable world where even the environment itself becomes an active entity. Instead of using the top-down perspective, Every Creeping Thing then turns the whole problem around. It’s less a systematic than an experiential speculation. An attempt to model the sensory life of animals which are becoming involved in the post-HCD design process.

Both video games represent rather an early stage of a hopefully emerging video-game practice useful beyond the domain of design the limits of which remain, despite all the efforts, embedded in an anthropocentric way of thinking. What about games allowing for the direct interference (via the Internet of things, for instance) of other animate and inanimate entities and for the participation of non-human players? Or games taking place on other unusual peripheries outside of the keyboard-mouse framework? These are some of the options for further development which could give video games not only a new register of expressions but also extend their speculative potential. In the era of climate crisis it might as well be a plan for the survival of humankind as we know it, not just a theoretical exercise.

*English translation: Anna Žilková*

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