Play Computers

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Dear Reader,

I know you may be expecting an essay on game mechanics and videogames, here in this book, surrounded by such great company, what else would you be expecting? And yet, I don't want to write about game mechanics. Instead, I want to ask a simpler question: why do we play with computers?

Think about it: computers are commercialized as machines of productivity, as instruments and tools that improve our work, our daily life, and even our leisure. In the Western world, rare is the day in which we don't interact with a computer, or are at least engaged in a situation where a computer is playing a particular role. So, let me start my inquiry on the relationship between play and computers with a modest argument: the ubiquitous success and cultural impact of computing has been largely fueled by the inherently playful nature of computation and its machines.

I am not saying that computation equal play, but that one of the characteristics of computation, as a human-machine hybrid form of interaction, is its ludic nature. Apple's success happened when they made those grey boxes less grey, and more playful. Our smartphone interfaces make the metal and glass feel like an expensive toy. Remember Clippy! When we look closer, a playful attitude is essential to modulating our relationship with computers. Why?

In this chapter I want to appropriate the philosophy of technology (Verbeek 2005; Floridi 2013) and play theory (Huizinga 1992; Caillois 2001; Henricks 2015) to present one argument that helps answer this question. I will start by arguing that the point of encounter between play and computation can be found in their shared capacity to create worlds. I will use games to illustrate this point.

I will then situate this argument within a double philosophical tradition: on the one hand, I will apply postphenomenology (Ihde 1990) to understand world-

making as a form of technologically-mediated orientation of experience (Rosenberger 2009). I will analyze closely the technological mediation using the Philosophy of Information concept of re-ontologization (Floridi 2010, 2013). This will lead to the main contribution of this chapter: play and computation are related because they both are re-ontologizing activities. The rest of the chapter will expand the implications of this perspective.

Understanding the relationship between play and computation is crucial. Not only are we seeing a radical societal impact in the use of computers as labor monitoring and surveillance machines, but also as the privileged medium of entertainment and communication. Computers can be understood as instruments for playful production and consumption. User interfaces, feedback systems, and entertainment forms based on play are taking over the computing machine to envelop its powers in a friendly, playful discourse. Understanding computers from the perspective of play provides us with an original insight on computational culture.

So dear reader, I hope you are ready to take a break from games and mechanics and think about play and computers.

MAKING WORLDS

Dear Reader,

I have promised you that I would stay away from games and mechanics, but here I am, ready to start talking about games. This is not, to try once again to confirm that games are interesting cultural objects, or that we need game studies. Games are important because they are the dominant technology of play, the instruments that humans have designed to mediate the activity of play. If we want to understand play, games are the right place to start.

My argument in this section is simple: games create worlds. Contemporary theories of play (Sicart 2014; Henricks 2015) are typically derived from Huizinga's idea that play is at the heart of culture: "The fact that play and culture are actually interwoven with one another was neither observed nor expressed, whereas for us the whole point is to show that genuine, pure play is one of the main bases of civilization." (Huizinga 1992: 5). Play creates forms of order, and that order creates forms of culture. Order structures experience, directs our attention to a way of perceiving our being and what is around us. Playing is a mode of being in the world that operates as a focus of experience through the creation of order: "Inside the play-ground an absolute and peculiar order reigns. Here we

come across another, very positive feature of play: it creates order, is order" (Huizinga 1992: 10).

Games, the privileged technology of play, create order by providing formal, agreed-upon boundaries and meaningful actions for players to collectively engage in play-based interactions (Goffman 1961). When we talk about game mechanics, game rules, and all other formal elements of games, we are describing the instruments that games have to suggest an order in our actions, to propose goals to our activity. With these instruments, play creates new orders in the shape of the temporary worlds of games.

These arguments need some empirical evidence, so let's start by looking at a sport: football. Not the high stakes game played by professionals, but the game played with friends for the pleasure of playing, with no other goal than to play the game together. The game is designed around a very simple challenge: trying to make a ball go into a goal using only our legs/feet or head. This rule creates a handicap, the handicap creates a challenge, and the challenge is bound in time and space so that it is identifiable: we play in a football pitch for the amount of time we all agree to play.

When we enter the football pitch and start playing thus we enter a new world. It is a world in which our skills and stamina determine what we can do and how we do it. A world in which the goal focuses our attention, where our teammates are our comrades and a world structured around challenges that only exist because we voluntarily accept these handicaps. The limited actions that are meaningful in this encapsulated new world are afforded by the game mechanics as interpreted in the act of play. The world of the game of football only exists when we play football.

In the case of video games, the world creation process is somewhat similar. A game like *World of Warcraft* (2004) creates the world of Azeroth for us to play in. Computational media is used to give an audiovisual identity and presence in the world of Azeroth, as well as to mediate our interactions with and in that world. The process is similar to the game of football: players engage with the video game in order to experience play, and they play in that world using the mediating instruments that the game provides them with.

Let's return to the concept of world: what do I mean by play creating worlds? When we play, we orient our experience to the exploration and appropriation of the world in order to achieve some form of pleasure. This orientation of experience happens through the creation of order in the world. The technologies we create to play are mediating instruments that facilitate world creation, structure it, and give consistence to that created world. The props for play, like balls, or cards or keyboards, help us focus our experience and interact with the

encapsulated world of play. At the same time, our voluntary yet negotiated intention of playing within that world makes us want to uphold the experience of the world we share and create alone, and with others.

World creation is not the exclusive domain of play. Many other human activities structure our experience and create encapsulated worlds, sometimes with the aid of mediating technologies. Work, usually and falsely considered the antithesis of play, is the structuring of labor through technologies, rules, and rewards. Other activities like learning or loving, are adept at creating these worlds, with or without the use of technologies of mediation.

In this chapter I want to make an exceptionalist argument about mediation, play, and computers. Computers are not just mediating technologies: they are world-making technologies that affect human experience (Rosenberger 2009). Computers are mediators and creators, engines and vehicles that create these worlds. If we want to understand the impact computers have had in our culture, we need to see them as creators of worlds.

The world-creation capacities of computers require to be programmed with an image of the world they are being inserted in. For computers to become agents in the world, we need to give them a sense of what they are, what to do, and how to do it (Bøgh Andersen 1997). Even the most advanced machine learning programs need to have a sense of what data they require in order to learn. Computers need a bounded vision of a bounded world so they can be a part of that world. That bounding happens through programming, and their bounded agency is the consequence of algorithms (Agre 1997).

But once a computer becomes an agent in the world and is a part of the world, that world for all other agents is changed. On a macroscopic level, you can probably see this phenomenon as Amazon and other online retailers that have gentrified the web and emptied main street. On a smaller scale, the world is now interfaced through smartphones that calculate your steps, pulse, and habits so they can be neatly packaged in apps that provide appetizing data for marketers and governments (Dourish 2007; Manovich 2013).

When computers are given agency in the world, the world changes. It becomes an "infosphere", an environment in which informational beings, some human, some not, exchange information and cohabit in a complicated ecological equilibrium (Floridi 1999). Some of these agents are your neighbors, some are your household appliances, but they all inhabit this world in which computers and their processes have a role defining what *is* and how that actually is. This is because computers *re-ontologize* the world.

Re-ontologization is a philosophical concept coined by Luciano Floridi, who uses it to explain how computational technologies transform the nature of the in-

fosphere itself because they are information machines: "the ontology of the information technologies available (…) is the same as (and hence fully compatible with) the ontology of their objects, the raw data being manipulated" (*ibid*: 7). Floridi addresses the ethical problems of the Information Age based on this observation, as he argues that re-ontologization is the "source of some of the most profound transformations and challenging problems that we will experience in the near future, as far as technology is concerned" (*ibid*: 6-7).

Let's describe this in less abstruse terms: banking used to be a more or less painful interaction amongst humans who on occasion needed the support of calculation tools. Then, computers arrived, and quickly took over the transfer and manipulation of capital on a large scale. Still, for many of us, until recently banking was a human affair. Prior to online banking and banking apps, customer-facing bank operations were a human-machine assemblage (De Landa 2006), with humans interfacing the complex system of finance. But now banks embrace how computers can turn most services into digitally mediated *self*-services, displacing the human interface and delegating its specialized labor to the customer. We pay for the comfort and the right to perform the labor that banks did, because computers have changed how we understand and perform banking and finance.

In the stock market the re-ontologization process has been even more radical. For example, high frequency trading (Lange, Lenglet, & Seyfert 2016) is a game of speed between algorithms racing each other while shaping the behavior of the stock market. Algorithms afford calculation speed and big data processing, and the actions they autonomously take based on those rules, change not only the results of the trading, but also the actions possible to all agents in the infosphere, human or not.

The radical redefinitions of the world only happen if the computers are programmed with a specific *model* of an infosphere (Dodic-Crnenovic 2010). Their agency is a result of a particular interpretation of the world they are inserted in as agents (Floridi and Sanders 2004). Algorithms are not magical beings: they are sets of instructions based on formal rules that allow computers to perform actions in the infosphere (Hill 2015). Re-ontologization is then the radical redefinition of the infosphere by computers programmed with a model of the infosphere in which their agency is possible.

I propose to treat infospheres as "worlds", consistent environments of structured experience. This allows me to consider play as a re-ontologizing process that creates a world within this world. Let's return to the example of games: through the design of challenges and mechanics, we create a gameworld that gives meaning and consistency to those actions. A game also gives agency to non-human agents, from AI agents to the humble (foot) ball. A game gives

meaning to agency, it gives players the possibility to voluntarily accept constraints so that they can inhabit and enjoy that world.

Similarly, a computer creates a world where agents have to acknowledge and accept its existence in order to be able to interact with it. That world is created as the computational implementation of the relevant aspects of the world in which the computational agent is inserted, and that encapsulated world where computers with agency become an infosphere.

So why do we play with computers? The answer is deceptively simple: we play with computers because playing is a way of making sense of the world-making capacities of computers. We humans recognize in computers world-making machines, and we use one of our ways of creating worlds to engage with them.

But this is too simple of an analysis. We need to know what reontologization means, and how it can be used to connect play and computation together. Philosophy can help us. If play and computation share the capacity to create worlds, we need to understand how we experience the world, and how *experience* is related to technologies. It is time to return to the things themselves.

TO THE GAMES!

Dear Reader,

By now you must be tired of reading my argument about play creating worlds, and how computers also do it But this is the most important, if not the only contribution of my chapter. And in order to explain why it is so important, I need to remind you that technology directs our experience and creates worlds and subjectivities. In this section I will expand upon this argument by applying the method of experimental postphenomenology (Ihde 2012).

Postphenomenology is a contemporary interpretation of Husserl and Heidegger's phenomenological work, focused on inquiring about the mediating role of technology in shaping our experience of the world (Verbeek 2005). In brief, postphenomenology has developed a methodological approach that allows for identifying and questioning the role that a particular technology has in the experience of the world. Postphenomenology is a particularly interesting methodological tool as it allows us to analyze technologies, while keeping in focus an interest in human experience.

Let's start with a simple postphenomenological analysis. The first step will be the analysis of the experience of a video game. I will then move on to the

analysis of the experience of a playful running application, and conclude with the analysis of a conventional running application. The goal of these analyses is to argue and illustrate how the experience of the world mediated by digital technologies has an inherent play element.

In this beginning, let there be *EA FIFA (2017)*. I am an avid player of this game, skilled and knowledgeable about its in-and-outs. I have turned on the TV and PS4 console. I have navigated to *FIFA's* in-game menu, using the controller, so that I can choose a team. I select Borussia Dortmund, as I often do, and press a button so that the computer finds me an online opponent. The game hasn't caught my total attention yet: I check Twitter on my phone. I have started the *game*, but I am not *in play* yet. But now it starts and as the game loads I am presented with a view of the virtual football field through a camera that simulates a television broadcast.

I hold my controller. My left thumb is on the left thumbstick. My right thumb hovers over the 4 buttons (square, triangle, cross, circle) on the right side of the controller. My right index finger hovers over the right trigger buttons, closer to the R1 button. My left index finger is firmly set on the L1 button. The match begins.

A flick of my left thumb makes me pass the ball to a teammate, or shoot. I sprint with my right index finger and my left thumb. With a tap of my left index finger, I jump from avatar to avatar, controlling different players and their positions, keeping my defensive stance, making runs to the open spaces.

But it is only when I reflect upon the game and watch a video of my playing that I'm aware of my actions. While I am playing, I am controlling the entire team, I *am* all players in that space, I *am* the patterns I can trigger and the actions I command. The controller is not present, the game demands all attention because all my world is onscreen, reading patterns and reacting to the opponents' actions. I am immersed in the world of *FIFA (2017)*. An AI helps me play, and I read how it behaves as if it was a teammate. I read how the opponents move, how they are aided by the AI, how the game unfolds in its choreographed logic of movements and goals.

When playing *FIFA*, the world is that of the game. The controller does not exist. I am in that world, a nexus within a distributed set of agents (my players, the opponent's), another human player, and different AI systems competing with each other.

The world, as experienced by me while playing, is composed of those technological assemblages (DeLanda 2006). While I'm playing, all that makes sense are the actions afforded by the controller and what I see on screen. My *experienced* world is that created and mediated by the game. My whole experience is

limited, during my time of play, to the bounds of the game of *FIFA*, freely accepted and mediated by the technological devices I am holding and peering into. I am the controller, the team, the players, the AI's teammate, in the world of *FIFA*.

I am also holding a technological device in my hand when I am physically running in the "real" world with *Zombies, Run! (2012).* However, I am not looking at a screen, I am listening. I am interested in the story I am part of. I want to run, but I also want to be a survivor of the zombie apocalypse. This application combines my interest in running with the capacity to be transported to a new world.

When I run outside, the world around me is different. The routes I choose to run are selected for their asphalt quality or scenic views. If I run to my furthest destination it is always to a scenic view – a reward for having run so far. Running changes the world.

But running with *Zombies, Run!* (2012) is a different experience. I put on my headphones, and the story starts. The story, a classic survivalist dream of the end of the world, makes me a survivor in a world overrun by zombies. I have to run to survive, to collect items, to complete the stories.

When I run with this app, the world changes by the rules of the game. It is the story being told, my capacity to interact with it, both creates the world around me, and gives sense to my movement. The story changes the world around me. It is through the lens of that narrative that I configure my activity. I act on its demands. The app changes the real world by mediating my activity, both by tracking my movement and by telling a game-like story.

What happens if we remove the story from the experience? I used to run using the Nike+ service, using an iPod (never forget!) to listen to running data and feedback. For me, one of the key points of that service was its capacity to give me live updates on my progress. Before running, I would schedule the length of the run, and then I would start running. The device disappeared from my horizon while running. I was listening to audiobooks while looking at the world and focusing on my running, pace and timing. At my halfway point, a voice would alert me of my milestone and the device would come back to my experiential horizon, but just briefly. Soon the physical activity engaged me once again.

400 meters prior to my stated goal, the voice returned and so did the device into my experience. It reminded me every 100 meters that I was close to the end. When I reached the end I was congratulated. When I got home, I uploaded the data and saw a map of my run. I correlated the data with the data from Google Maps. I had run more than I thought. Or less. There is always a discrepancy between the data. But I always ran whatever Nike+ told me is right. I did not run 5

or 10 kilometers. I ran what my phone calculated to be 5 or 10 kilometers. I run in the world, my phone understands. Or better, I run in the world my phone created. No need for a game. The way the sensors of this computing machine are calibrated to interact with the world, and the mediation of my experience of that world through that machine, have reconfigured the world. Nike+ creates a new world for my experience, one in which a machine dictates the distance, and thus my own experience of running.

My experience of the world is always mediated by technology, which shapes my intentionality, helps construct my subjectivity, and outlines the world as I experience it. In other words, technology shapes the world I experience, shapes my experience itself, and my subjectivity.

This process is one of world-construction: our experience is that of creating and being in a world where our experience and our subjectivity *become*. Games are devices explicitly designed to construct that world by constraining agency and creating obstacles that focus our experience. The other technologies I have briefly analyzed have different operational processes to reach the same result. One scaffolds our experience through games, but also by making use of computing technology. The example of Nike+ shows how we don't need games to create a world. Computers create worlds in which our experience and subjectivity is affected by their mediation and agency.

Much like games, computers have the capacity to organize our experience based on rules, limiting our action but also enhancing it, giving it new potential meaning: running away from zombies, becoming healthier one run at a time. Computational technologies perform an operation in our experience that modifies our experience of the world. I insist: they create worlds, much like play does.

Postphenomenology allows us to see how computing technologies and play arrange our experience in similar ways. However, postphenomenology does not allow us to analyze how these worlds are created in detail, what the meaning of artificial agency is, or, more importantly, what the role of play would be as an experiential orientation in a world created by computers. These questions need to be addressed more granularly. The purpose of this section was to illustrate how games and computers create worlds that affect our experience. In the next section I will introduce a concept that will allow me to explain this process in depth, while also providing the foundational argument that connects play and computation.

RE-ONTOLOGIZATION

Dear Reader,

So far, we have played games, and we have thought about computers. I have explained to you that the way we experience the world is unavoidably mediated by technology, and that computers are an exceptional type of machinery because they are afforded agency in the world thereby changing the ontology of the world. Computers create new worlds, much like play does. Those are the worlds we experience. Now I am going to go deeper into that world-creation process, presenting the concept of re-ontologization to put experience and ontology in the same conceptual space. Caution: philosophy ahead.

Postphenomenology as a conceptual approach allowed us to describe what happens when we interact with technology in the world, and when we play. The mediating similarities between play and computation have to do with their shared capacity to structure experience and direct intentionality through rules that constitute a *world as experienced* (Ihde 2012). However, postphenomenology does not allow us to properly look beyond the experiences of individuals. If play is really at the heart of computational culture, we need to be able to analyze the shared elements between play and computation from a broader perspective, looking at them not only as constitutive of individual experiences and worlds, but also as operating within the larger network of society.

To properly make the argument that play and computation are related – and this relationship has effects in shaping the cultures, technologies, and social arrangements of the information age – let's look at this world from the perspective of re-ontologization (Floridi 2013: 6-8). How do computers transform the world? Computers can store and process data very quickly. For doing that, they need to be fed data; they need to be given models that are logically consistent and formal enough so that computers can perform calculations with them. An important part of computer programming is precisely that: to design the formal ways of "defining" the world so a computer can store them as data and perform calculations on them (Agre 1997). Modern machines can perceive the world around them. Computers have arrays of sensors that can directly translate the world surrounding them to data that they can act upon, provided they have been given adequate formal tools to process the data streams. And finally, by being networked, computers can be entry points to a vast network, effectively re-weaving the world into a mesh of infrastructures and routines that are interconnected (Galloway 2004).

Essentially, when programming a computer to perform a task, programmers translate the task into computable instructions. There are material limits to the computations a machine can perform (Agre 1997). Therefore the model of the problem is the program given to the computer to execute, it is a translation to computable problems of a particular understanding of the world. It is also the result of a process of abstraction, which factors in the processing time available for a specific machine to perform its calculations. Computer programs are models (of the world) limited by what can be realistically computed by *actual* machines.

This process of creating a world for the computer is the first step towards re-ontologization, because programming gives consistency to the infosphere where a computer is given a degree of agency. Once we program the computer so it can understand the world and act in it, that world is also changed for human experience. An infosphere is created, with hybrid human-computational presence. The world in which that infosphere is instantiated is re-ontologized.

Let's make this concrete with some examples. Thanks to the widespread presence of ubiquitous mobile computation and the development of encryption and security technologies like blockchain, cash is an endangered species. If we want to be a part of computationally augmented banking, we need to renounce money as a material thing, adapting our behavior to be citizens of this infosphere. In the infosphere, cash is a throwback to the materiality of what never was anything more than a network of agreements only now these are computationally stored, verified, and communicated. Money has finally surrendered to its true nature, and become an informational transaction token.

Physical money is dying because it is more convenient, and perhaps ontologically more accurate, to use computers as agents for transactions. This death is the consequence of applying formal rules that change degrees of agency and the nature of being in the domain of monetary transactions: computers become agents in the world of economics. The formal rules these computers enact, effectively give them agency and re-ontologize the world: the nature of money has changed.

Another good example of this process comes from videogames. A game is a set of rules that structure agency, space, time, and for some scholars studying games, meaning (Juul 2005). The rules of a game define what is and what is not possible within the boundaries of the experience. Games are technologies designed to give meaning and purpose to actions taken in pursue of a goal defined by the game itself but agreed upon by the community of players (Suits 2005). Videogames are games in which those rules are part of a system of computational agency. The rules themselves have been designed so they can be computed within the given technical requirements of platform. The experience of players is

that of the rules created and upheld at runtime by a computer agent, and the ontological consistence of the videogame world is coherent with the process of creating a world that is re-ontologized through a computer. It is a re-ontologized world because the world of the videogame, in the experience of the player, is broader than the world the computer agent can create. But what is presented as meaningful for the experience of the player is limited to that which can be computationally presented to them. Players don't play a videogame, they play a re-ontologized instance of the abstract, platonic ideal contained in the videogame technical object.

It is precisely this connection with play, and how computers help us create the worlds in which we play in the form of videogames, that allows me to propose the argument that play is a privileged form of interacting with computers. Let's summarize the argument so far: when we play, we use rules to create a world. We inhabit that world through the experiential lens of play. The actions we take while playing, as well as the identities we may perform, are all related to the world created by the activity of play itself.

Computation performs a similar operation of world-creation. In order to become agents in an infosphere, computers need to be given clear instructions as to how to compute the data they work with. They also need to be able to operate with other information agents, situating them within their network. And they need to be open for those agents to interact with them, to provide input and receive feedback. To do so, computers become a part of a world that has to adapt to the particular ways in which they have agency. When introducing computational agents in an environment, the world is changed. These agents appropriate the world, and we need to live by the rules that allow us, and them, to interact.

Play and computation share the capacity to create worlds in which agency is redefined. Play sometimes takes over, and leverages computation to create worlds, like in videogames. On the other hand, play is sometimes used as a way of understanding how computational worlds operate, and why we should care about them. It is the world we live in, and in the western world it is already an infosphere, a world created by and for computers. Play gives us the possibility of understanding and redefining our agency with that informational world. In the next section I will explore this possibility in detail, focusing on how play is an interface to the world created and facilitated by computers, and how that interfacing allows us to shape our experiences of the world.

PLAYING, WITH COMPUTERS

Dear Reader,

By now, I hope your initial skepticism about my claims regarding play and computation has dissipated (I also hope you were skeptical regarding my claims – what a waste of arguments if you weren't!). There is not much left for me to argue about in this chapter. I have already presented my main argument. What I have left to say is perhaps the most important thing: what is at stake? Why does it matter that play and computation are related? This brief section will provide (even more!) arguments that apply the concepts presented so far to explain why this way of seeing play and computers is so important.

Play and computation are related because they both create worlds that shape human experience. We use play to create worlds, and we use computers to create worlds. This answers the question I posed in this chapter: why do we play with computers? World-creation, as re-ontologization that shapes human experience, explains the relationship between play and computation. There is of course much more work to be done, but we have now the keystone that allows me to question the play experience of computational worlds, and the computational experience of play worlds.

However before finishing, I need to explain how this idea might work as applied to future studies of play and games. Because there is a key problem with the re-ontologization argument: we already know that play can create worlds. At the same time, we know that part of what fuels the information revolution is our capacity to program computers to act in the world, and to envelope the world so that computers can be a part of it. So why is this so special? Why is it that re-ontologization explains *everything* (or almost everything)?

Let's start from the beginning. The most important aspect of the information revolution is that most of our experience of the world is now being mediated by computers: computers running the databases that manage our banks, computers we carry in our pockets, computers that allow us to do new jobs. We live in a world where it is complicated not to see the mediation of computers. This is what classic postphenomenology has not covered: we cannot opt-in to a world of computation, since the world is already informational. The world is already an infosphere, and living in it means taking for granted the computational layer of experience.

However, postphenomenology allows us to look at how human experience takes place in this world, and how we construct our subjectivities and how technologies play a role in the shaping of these technologies. We start with the as-

sumption there is always a technology present in the shaping of our experience, and that this technology is likely to be a computer.

We need to challenge and extend postphenomenology by inquiring into the human intention towards this technology (Rosenberger 2014). Classic postphenomenology does not think about intentionality, which is melted in the way the experience is shaped by the technology. I want to challenge this assumption, since an important part of having human agency is the capacity, often limited but still relevant, to direct our intentionality towards mediating technologies.

Some of our experiences of the world are mediated by computers. We *know* that running with an app has a computational element, and we *know* that in order to experience the kind of fitness experience we want to enjoy thanks to the app, we need to establish a relationship to the computer. Similarly, banks and other trading institutions need to acknowledge the material principles of computation (processing time, data transmission rates) if they want to benefit from high frequency trading algorithms. And we need to put some trust somewhere in the sociotechnical network that provides us with news and updates about the world through websites and social media "shares". All of these examples show that there can be a conscious or unconscious acknowledgement of the presence of a computer having a measure of agency in the world we are experiencing (Floridi & Sanders 2004). We *can know* we are in an infosphere, we *can know* that, like in a videogame, there are computational agents having a role in shaping our experience. This knowledge is key in the way we shape our intentionality in the experience of the world.

Play is a mode of organizing human experience. It is based on an appropriative take of the world that creates a world with its own purposes, an *autotelic world* in the world. Playing is organizing our experience of the world by allowing agents to freely define their goals and constraints, to adjust to them, to stop the activity of play when they wish. Play is a way of structuring human experience around pleasures, but also around the paradoxes of appropriating the world and reinterpreting it without other purpose or goal than to experience the world in a playful way.

Human experience in the information age happens in an infosphere, a world in which computation has agency. Play, as a way of appropriating that world to give an orientation to human experience, can be used as a way of making sense of that agency, of constructing a world with the already re-ontologized world.

There are two strategies that play opens up for this making sense: we can either inhabit this computationally re-ontologized world as we do when we play videogames, accepting that computational agents also have agency in this world and we have limited agency so that they can coexist with us. This is a strategy of

playful submission, surrendering to the benefits of engaging with a computational world, being in the world with computers as if the actions they allow us, the activities we can perform thanks to them, are somehow related to the game mechanics that we experience in games. In this approach, we play *in* the computational world.

And so, we run the kilometers our fitness app wants us to run, even if those are just the calculation that a networked computer can perform based on the imperfect data of their sensors. Or we accumulate "likes" and hearts in social networks, to prove that people care. Play, through the language of videogames, allows us to live the computational world through the lens of the submission to computer-based agency.

The other orientation of experience that play affords is that of resisting the re-ontologized world. Instead of living in the world computers live in – by the rules computers need to be in the world – play can be used as a strategy to create a world in which the very presence of computation is a prop for play.

In this approach, we play *with* the computational world. We draw penises thanks to the tracking abilities of running applications, like Claire Wyckoff's Running Drawing (http://runningdrawing.tumblr.com). We remove numbers from Facebook so our experience of the network is not based on competition, but on whatever else it might be, as Ben Grosser's Facebook Demetricator (http://bengrosser.com/projects/facebook-demetricator/) art project proposes. We poke fun at these computers everywhere, because we can play with them. They are not agents anymore, but toys, in the deeply aesthetic assertion that we too can create worlds, and play in them. This is the play of resistance, the re-ontologization of a world *in* the world of computation.

Because play is also a re-ontologizing way of being in the world, it has a predominant role in understanding and shaping our experience of the computational world, which in itself is the result of a process of re-ontologization. Play is an interface for re-ontologized worlds. Interface not in the sense of HCI and UX, but in the experiential mode of a point of contact between technologies and humans, as a node in the network of experience. Play allows us to interface with the computational world, to understand its requirements and to live by, or against its rules. In videogames, the interface of play allows us to experience agency through mechanics, and express ourselves through them. In the computational world, play allows us to interface with the re-ontologizing processes that give computation agency in the world. Play is an experiential interface to the world of computation (Flusser 2013).

This is why it is so important to ask why we play with computers. As we drift towards a world in which computation is not only ubiquitous, but also in-

dispensable for our lives, we need to understand the ways in which computers shape our experience of the world. Play has a role in interfacing with these worlds-with-machines. Play is a way of interfacing that draws on the history of the technologies we built for play, like games and toys, but has to deal with the radical new worlds created by computers and their agency. Play allows us to understand how to live, and how to experience the computational world.

CONCLUSIONS

Dear Reader,

Why does it matter to know why we play with computers? After all, play is this childish activity, a structured series of whimsical attempts to find pleasure! Sure, we humans are defined by being playful, putting us together in a natural continuum with the animal world, and also challenging functionality as a driving force for evolution. But besides that, what has play ever done for us?

Except, of course, help us define the way we engage with the culture of the computation age. We make sense of these computational worlds by playing, we see the limited actions that we perform so that computers can be a part of the world through the lens of play, as rules we follow or bend, as goals we need to achieve. The re-ontologization of the world by computers has made it more possible to experience the world through the lens of play.

This is not necessarily a positive thing. Play tends to have this almost magical positive quality in our culture, as something that is fun, life affirming, creative and beautiful. But these are the consequences of orderly forms of play. Play can also be destructive, unruly and chaotic (Henricks 2009). Play can harm and hurt and wreak havoc in the world (Schechner 1988). For every creative use of play with computers, we will have trolls lurking on the sides, playing their dark play games. And if we do not understand that computation, in its very nature, facilitates play, we will never be able to address the multiple problems of living the world playfully. We will keep on feeding the trolls, consuming fake news, grieving, cheating and even inventing new ways of harming others through darker forms of play.

We play with computers because they create a world for us, just like play does. They create a world for us to be agents in, with strict rules and processes and ways of being there. We cannot avoid being in that world. But we can take responsibility for the worlds we create when we play with computers. Because this is my only (not) conclusion: we play with computers because they are ma-

chines *of/for* play. In the information age, play is a privileged interface with computers. And that might be as close as I can get to something resembling a conclusion – for now.

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