Anagenesis: A framework for gameful, playful and democratic future smart cities

Mattia Thibault
Postdoctoral researcher
Tampere University
mattia.thibault@tuni.fi, +358 (0)504713277

Oğuz 'Oz' Buruk
Postdoctoral researcher
Tampere University
oguz.buruk@tuni.fi, +358 (0) 504720177

Lobna Hassan
Postdoctoral researcher
University of Turku, Tampere University
lobna.hassan@tuni.fi, +358 (0) 504377294

Juho Hamari
Professor
Tampere University
juho.hamari@tuni.fi, +358 (0) 503186861

Abstract This chapter aims to go beyond extant gameful and playful approaches of urban management and governance by identifying the benefits and detriments in current approaches as well as elevating those benefits into a combined juxtaposed future vision of a playfully co-created city; *Anagenesis*. We ground our framework in the foundation laid out by three separate gameful phenomena: gamified e-participation, urban play initiatives (such as parkour or DIY urbanism) and games based on augmented cities technologies. We argue that while these separate phenomena all have their benefits and detriments, in democratic, playful and technologically enhanced activities organization, in meaningful combination, they provide an efficient and ethical way of engaging citizens in decisions regarding city making and urban design.

Keywords: e-participation, governance, gamification, augmented city, urban play, right to the city

> *It is impossible to envisage the reconstruction of the old city,*
> *only the construction of a new one on new foundations,*
> *on another scale and in other conditions, in another society.*
> Henri Lefèbvre, *Writings on Cities*

1. Introduction

Ordos City, in Inner Mongolia, is often regarded as a cautionary tale against top-down management of urban development. Ordos was established in the 2000s as a coal mining boomtown adopting a highly centralized urban approach to land development (Daft 2010). While initially helpful in establishing a city and its infrastructure, the centralized approach eventually backfired as it failed to meet the needs of the inhabitants. The city, since, has been

described as a ghost town, has undergone severe economic challenges (Woodworth 2015) and constitutes an ecological vulnerability for the entire region (Meng et al. 2010). Beyond the dystopic example of Ordos City: urban management is often perceived by citizens as non-democratic, dull and disconnected from their concerns (Glaser & Denhardt 2000). Cities are complex socio-cultural-economic-technological organisms: they are constantly defined and redefined by citizens going about their daily living (De Certeau 1980), by institutions, governments and businesses and by the constant flow of new technologies. All actors in a city compete for the possibility of *writing* it, of modifying its forms and uses, and of engraving themselves in the urban fabric (Volli 2008). Different approaches to urban writing have emerged during the years in regard to who should be entitled to *make the city*. Since industrialization, the two main strategies of organization of the urban spaces are those described by Williamson (1975): markets and hierarchies. In other words, today's cities are generally shaped according to free market logics and by the top-down action of governments. These two strategies might compete or collaborate, but together are able to influence almost the totality of urban interventions.

These strategies are not only involved with the material design of urban space and its organization but encompass also the networks of technologies surrounding urban life and operating as controllers over many urban activities. These technologies are sometimes explicitly designed to track closely every move of their citizens, disregarding privacy and profiling them. While this is true for many social networks or Smart City implementations, its most intrusive example is probably the Chinese Social Credit System: an ecosystem of initiatives that are being implemented in the People's Republic of China collectively aiming at fine grained social control (Creemers 2018).

We believe, however, that it is possible to escape these logics and to propose a new model of city, respectful of the rights of its citizens. In other words, instead of Ordos city and of Social Credit Systems, we believe that it is possible to build *Anagenesis*. Anagenesis[1] is a continuously self-regenerating city, where every citizen participates, in a democratic and creative way, in shaping the urban areas where they live. It is a human-centered city, capable of containing and representing the diversity of post-modern cultures and societies. Digital technologies, here, are not used as tools of control, but allow the Anagenesisians to be in continuous dialogue with the city, feeding it data, opinions and ideas, moving through its virtual augmentations, playing with it and with its appearance, gaining ownership and authorship over the public spaces. Glimpses of Anagenesis can be caught, today, in many discourses around bottom-up city-making, in situationist actions and in technologies and applications that allow us to interact in novel and unexpected ways with the urban environment. The ingredients for creating Anagenesis seem to all be available. What is needed is to combine them in the right way.

---

[1] The Greek word Αναγέννηση literally means "regeneration", and that it is why we chose it to indicate a city that constantly reshapes itself. Anagenesis, in Greek, is also the word used to indicate the Renaissance: it contains in itself a connection with an historical period of creation, artistic achievements, humanism and attempts of democratization in urban life. At the same time, the same word is used in biology to indicate a population that, in time, mutates and evolves without ever breaking apart. We decided to use this name for our city, then, because all three meaning apply to it: we imagine it as a place in constant regeneration, derived by a highly creative, (trans)human-centric endeavor, and that, despite the continuous evolution of its spaces and its denizens, it is still able to remain an organic whole

Anagenesis is an *experimental utopia* (Lefèbvre 1996). This chapter aims to build a framework that makes use of urban play as a key element to imagine and develop the cities of the future: a recipe for creating Anagenesis. In the next paragraphs we will propose to move from citizen engagement to novel ways of using gamification and play to empower the citizens and to create systems that ensure their rights to the city. Our framework will combine and build on several existing areas - eGovernment, DIY urbanism, location-based games and other urban play activities - creating synergies among them and addressing their weaknesses so to find the right balance between different approaches to city-making. Finally, two scenarios exploring possible future implementations of Anagenesis will help us address the implications and consequences of this new way of managing and organizing urban life.

2. For a playful citizenship

2.1 From citizen engagement to gamified empowerment

In recent decades, urban governance has increasingly recognized the need for democratic engagement and participation of citizens in decentralized urban planning and management. Initiatives have been implemented globally, building on established understanding of citizen participation (Arnstein 1969) to increase citizens involvement, for example, through citizen panels, open meetings, and public assemblies (Argiolas et al. 2009). As society became increasingly urban and the sizes of cities continued to grow, technology has become more and more involved in the attempts to increase citizen engagement. Governments started implementing strategies to facilitate citizen involvement in governance through ICTs that are not limited by time or physical space constraints. These efforts have been conceptualized around the terms of e-governance, e-participation and e-democracy. Although with different objectives, all these efforts attempt to utilize ICTs to foster digital collaboration between citizens and governments (Paskaleva 2009, Williamson 2007a). While these certainly are positive developments, they still do not make full use of the potential of digital technologies and limit their use to facilitating transparency or to consulting citizens, without really exploring the potential of these technologies for what Macintosh (2004) describes as the higher level of e-participation: *empowerment.* Empowered citizens take active part in the co-production of the city and are equal to government officials in the service of the public good. The strictly hierarchical nature of urban management is then disrupted, while the bottom-up actions of the citizens are facilitated within an accepted partnership framework and contribute to making urban spaces more livable, democratic and responsive to citizens' needs.

As the size of metropolises continues to grow, the need to employ the data gathering and processing powers of crowds of citizens, as well as co-producing with citizens to utilize their creativity and deep knowledge of the everyday necessities of city spaces has not been greater. Getting citizens involved in city management is not only a just democratic practice but is becoming a practical necessity. However, an ethical systematic collection of data requires active and continuous engagement of citizens.

While the technologies that could potentially enable co-production of cities logistically are increasingly becoming available, they have not yet necessarily enabled the empowerment and engagement of citizens. Therefore, many initiatives in e-participation (Hassan & Hamari 2019; Klamert & Münster 2017) and analogical spaces such as crowdsourcing (Morschheuser

et al. 2017), crowdfunding and sharing economies (Hamari et al. 2016) have turned to draw inspiration from games as a method to engage individuals. Games and play are popularly regarded as pinnacle forms of collaborative, intrinsically motivated engagement and creativity. The application of games and play, to contexts outside those that are seen as playful or gameful, has come to be called *gamification* and it refers to transforming systems, services, organizational structures or virtually any activity to afford similar positive psychological states as games afford (Hamari 2019). Gamification is currently pervasively harnessed in several domains (Koivisto & Hamari 2019) including realms of management such as crowdsourcing (Morschheuser & Hamari 2019), e-participation (Hassan & Hamari 2019) and organization (Vesa et al. 2017). However, while the intention of such gamified initiatives may be virtuous, they still commonly represent top-down management rather than real free emergence of city-writing from citizens (Thibault 2019a).

While the intentional gamification of e-participation has progressed in its own research vein (Hassan 2017; Harviainen & Hassan 2018), cities are being gamified also from another direction. If, on the one hand, gamified e-participation focuses on forms of play that are closer to the idea of *ludus* (rule-based, institutionalized and hierarchical kinds of play), on the other hand, there are attempts to implement activities based in *paidia* (free, creative, anarchic forms of play)[2]. These activities are generally oriented towards creative, free play that can have some anarchic undertones. Activities of DIY urbanism, practices such as *parkour* (Ameel & Tani 2012) or expressive forms such as graffiti exploit playfulness to rewrite and reshape urban areas according to the desires of the citizens. Nevertheless, governments often have a poor consideration of these initiatives, as they ignore regulations and proceed independently, and, hence, governments tend to suppress and erase them.

Finally, urban games are activities that make use of a wider spectrum of forms of play temporarily transforming urban spaces in playgrounds (Mäyrä 2017). Augmented reality apps use cities as a basis for full-fledged games such as *Ingress* (Niantic 2012) and *Pokémon Go* (Niantic 2016). Seeing the impact of collaborative augmented reality games (which can have positive effects, for example, on players' health, cf. Koivisto et al. 2019), the e-participation field has sometimes attempted to replicate these games. In said e-participation games, citizens can, for example, collaborate to fight fictional zombies (similarly to successful games such as *The Walking Dead, Our World* (Next Games 2019) but while doing so also actively map their cities (Prandi et al. 2017). These attempts, however, are still far from making good use of the players' creativity and the potential of these forms of urban games are still largely untapped. The rise of playful citizenship (De Lange 2015) is still in the making.

2.2. Ensuring the rights to the city

There can be many strategies to empower citizens and manage city-making through gamification. To guide us in the realisation of our framework we decided to focus on the key idea that cities should ensure and promote the citizens' right to the city, (Lefèbvre 1968).

---

[2] Ludus and paidia are terms introduced by sociologist Roger Caillois in his seminal book *Les Jeux et les Hommes* (1958). They refer to two fundamental forms of play: on the one hand that all the ludic activities that are regulated, stable and institutionalized (ludus), and on the other those that are spontaneous, chaotic and ever changing (paidia). These forms, however, are not opposite, but are present, in different measures, in all play activities. In the most rigidly regulated games, the players might feel the temptation to modify the rules and in the most eclectic session of child play structures and rules might begin to emerge.

According to Lefèbvre, human needs have anthropological foundations but acquire a social dimension. They form a conflicting set, encompassing the needs for the predictable and the unpredictable, for certainty and adventure, for isolation and encounter, for solitude and communication (Lefèbvre 1996). For this reason these needs cannot be addressed by mere functionalistic means, but require spaces for creative activities, symbolism, imagination and play (Ibid.).In cities where most of the urban space is occupied by commercial activities and the exchange of products, the need, space, and time for these encounters direly arises. The right to the city is then a cry and a demand for such space: it is not a visiting right, nor a nostalgic wish to return to traditional cities, but a *right to urban life*. In other words, Lefèbvre calls for a city that is more meaningful and ludic, but also more conflictual and dialectic: open to the encounter and in an eternal search for renovation (Harvey 2012).

Lefèbvre ideas have been very influential in our understanding of urban space and its organization. The right to the city is recognized in several countries and has been explicitly inserted in, for example, the Brazilian Constitution in 2001. New paradigms, such as James Holston's *Insurgent Citizenship* (Holston 2009) and David W. Harvey's *Rebel Cities* (Harvey 2012) were deeply influenced by Lefèbvre's thoughts. As Harvey himself recognizes, the profound impact of this perspective is due to the fact that it emerged from the city streets, with daily confrontation with its specific problems: homelessness, gentrification and eviction, criminalization of the poor and of the marginalized and so on. These issues cannot be solved by attempting to recreate a pre-industrial city, but perhaps by imagining a new approach to city organization that goes beyond the issues brought by unregulated capitalism and globalization.

Lefèbvre urges us to remember that cities are complex machines that cannot be approached simply by a functionalist perspective. They are indeed delicate networks of networks, in need of infrastructure and logistics allowing a continuous supply of energy and resources from the surrounding areas and enabling the daily livings of large numbers of human and non-human inhabitants. Nevertheless, if urban spaces were limited to their functional dimension, it would be possible to develop urbanism as an exact science. We could devise the perfect ways to manage resources, traffic, city infrastructure and we would not need citizens' input in this management process. Building a utopia would have been a simple matter of good engineering. However, as the case of Ordos City has shown, city management does not successfully proceed in this manner. A purely top-down approach to city-making, even when supported by competences and skills, risks total failure.

Citizens make sense of cities in very personal ways (Lynch 1960; Lotman 1990, Lefèbvre 1996). Both the functional and the semiotic dimension of cities, therefore, are of capital importance in city making. Space is not a given, nor an abstract quality, but a product of human interactions and struggles (Lefèbvre 1991). This is also why cities are at the center of conflicts and struggles for the possibility to decide who will be allowed to "write" the city or shape it's environments and therefore its citizens' behaviors.

Citizens, however, often have little say in the urbanistic strategies that shape the environment where they live. Their "authorship" is very limited, and the forms of city-writing available to them; graffiti, affixing posters, etc., are often illegal or require payment. This unbalance is at the base of Lefèbvre's call for a *right to the city* and for positioning citizens at the center of urban design (Lefèbvre 1968). Lefèbvre advocates for a renewed centrality of citizens in the

urban space, where they should play the role of protagonists instead of being reduced to commodities.

The urban landscape, moreover, has undergone many important changes in the last decades. Connectivity and ubiquitous technologies have invaded the public spaces and have become inextricably embedded in them. The right to the city, then, needs to encompass also the right to the *digital city* (Foth et al. 2015) to address the challenges and issues arising from smart cities (Greenfield 2013) and to ensure that the digital infrastructures and spaces of the city are open to their citizens as well.

From this perspective, within our framework, we propose three possible articulations of the right to the city:
- The right to be represented in the city; Feeling represented in and by the city in which we live is a primary need that strongly influences our sense of belonging (Volli 2008, Seebruger et al. 2015).
- The right to use the city; The possibility of moving and acting freely in the urban spaces is fundamental for its citizens. Restricting these possibilities creates situations of conflict.
- The right to write the city; The power to shape the urban environment is usually unequally distributed and is centralized to certain powerful actors in a city. Average citizens often have little to no possibility of acting directly on the city.

These rights refer both to the urban spaces and their digital counterparts: digitized versions of the city spaces, urban augmentations and smart city technologies should equally allow citizens' self-representation, use and writing.

These three principles will guide us in our utopian experimentation: Anagenesis is a city that, far from looking nostalgically backwards, embraces technological advancement and makes use of it to grant its citizens their rights.

We have now a clear objective: that of promoting the citizens' right to the city and of empowering them through the gamification of urban government. There are many strategies and tools at our disposal to reach this end. The next section of this chapter, then, will be dedicated to an overview of the different possible ways of gamifying city life and urban organization.

3. Gamification and Urban Governing

3.1. E-participation
While perhaps the purpose of governing bodies is to attend to city management complexities, governments have long realized that this job could be better executed through constructive, productive cooperation with the actual inhabitants of the city who experience it day to day: citizens. Since the early days of civilization, nonstationary councils where set up with city inhabitants, for example as part of markets in ancient Rome, the original "*forum*", where anyone passing by could contribute (Grant 1991), then through town hall meetings (Arnstein 1969) and more recently through online forums, discussion boards and e-participation initiatives (Macintosh 2004). Citizen participation has often been useful to city administrators; it provides them citizen input and feedback on city management issues, sometimes even

directing the administrators to consider needs and solutions that they might not be aware of (Bingham et al. 2005; Lee & Kim 2014). These practices are mostly organized in structured, top-down implementations for specific purposes (Hassan & Hamari in press). Nonetheless, governments often struggle to engage citizens in these (e-)participation initiatives (Dryzek et al. 2019; Toots 2019). Participation is *alas* an activity of little to no hedonic value or immediate benefit for most citizens (Dargan & Evequoz 2015). Moreover, there is often a lack of feedback from governments to citizens on how citizen input has been useful or utilized in decision making and planning, hence participation initiatives often appear a pretend, "tokenist" activity that governments perform under the mere make-believe of democracy and inclusivity (Losh 2009).

In efforts to combat these perceptions of e-participation and to improve the process so to further encourage citizen input to city management, games (Asquer 2014; Mayer 2009), and gamification (Hassan & Hamari 2019; Mahnič 2014) have been introduced to many governmental and e-participation processes. The policy gaming field (Duke 2011; Geurts et al. 2007) has been relatively successful in creating effective policy games. Such applications, however, tend to be developed only for specific target purposes - a good example is *Metropolis*, developed for educating officials and students on urban planning processes (Duke 2000). Hence, such initiatives can be seen to be limited in their use scope, and perhaps too structured to allow for emergent creativity outside timed interaction sessions with city officials. There are hopes, however, that the relatively new gamification practices, being easier to implement for average individuals, would contribute to shift how e-participation is being implemented from structured, top-down implementations, to bottom-up, inclusive, creative implementations (Hassan & Thibault 2020).

Gamified e-participation is often implemented through the currently well-structured e-participation processes, although we often do observe slight modifications of these processes due to gamification (Hassan & Hamari in press). When gamified e-participation is, arguably, well-designed, it has especially been useful in providing citizens feedback on their e-participation activity, showing how their input was utilized in city planning. Gamification often increases the legitimacy of implemented solutions that were carried out in cooperation with citizens (Bista et al. 2012, 2014). Through such structured processes and feedback loops, citizens perhaps see that they can exercise their right to be represented and to write the city,

The danger, however, remains that most gamified e-participation initiatives we see today (see Hassan & Hamari, in press for a review), are highly structured and institutionalized, strictly and are solely related to ludus forms of gamefulness. Gamification is most often implemented to incentivize citizen implementations of previously approved policies, e.g., for conserving energy (Carreira et al. 2017) or incentivizing the use of sustainable public transport (Kazhamiakin et al. 2015). It is also implemented to use citizens as crowds for data collection (Olszewski et al. 2016). While their effect can be beneficial to society, these implementations do not foster creative citizen input. Current gamification implementations also often create obstacles for said input and for inclusive participation, mainly by adopting competitive designs that merely reward winners or highest contributors (Hassan & Hamari 2019). While such competition can drive up engagement, showing that gamified e-participation does engage people, these same engaging dynamics of competition often lead to user behavior that can come to exclude minorities with weaker voices in a competition. Competition also

leads to behaviors that "game the system" for one's benefit through cheating or bullying others (Harviainen et al. 2014; Hassan et al. 2019), rather than to fostering creative idea generation that often requires a mix of competition and collaboration (Morschheuser et al. 2017). Most gamification implementations we see also remain top-down and showcase extensive attempts to utilize rewards, incentives and conditioning to create "good citizens" according to what a government, with high hierarchical and perhaps patriarchal power, deems "good" (Al-Yafi & El-Masri 2016; Williamson 2017b). This threatens the essence of democratic practices that should be inclusive and co-created rather than decorated.

Bottom-up gamification implementations, however, do exist, and often represent attempts to counter governmental practices through using gamification to organize political opposition (Wang & Zhang 2017), or unintentional gamification, in the form of humor and playful activity, for example, through citizens' use of memes during elections (Haleva-Amir 2016). These bottom-up activities showcase the potential of gamification in facilitating higher rungs of e-participation through empowering citizens to co-create, bottom-up. Similar to most bottom-up approaches to citizen engagement with urban spaces, these bottom-up gamification implementations are often sanctioned, indicating that the citizens have not yet been allowed a free, creative, emergent space to co-create with the government through gamification.

3.2. DIY Urbanism & Playable cities

If municipalities sometimes ask for the citizens opinions, they rarely allow them many possibilities of directly "writing" the urban spaces. In reaction to this restriction on urban authorship, many rebellious and semi-rebellious activities emerge, often characterized as forms of activism or protest - that sometimes acquire playful characteristics for example, as we mentioned, with the use of memes and sarcasm (Haleva-Amir 2016) or organizing opposition with gamification (Wang & Zhang 2017). These actions include tactics of self-representation, practices of appropriation and use of public spaces and actions of city writing - in other words, they are ways for reclaiming the citizens rights to the city.

Self-representation in the urban environment often takes the form of graffiti, used to tag one's own name, display political symbols, express one's feelings and so forth (Fister et al. 2012). It also encompasses forms of self-representation in digital extensions, augmentations and representations of urban spaces - that is, urban digitization efforts led by private companies. The later behavior often materializes in, for example, photobombing or showing the middle finger to the Google Car so that that expression would become a part of Street View (Nahirny 2019).

The right to use the city, is also addressed in playful, but often confrontational ways, based on paidia and sometimes with anarchic undertones. The appropriation of spaces and monuments by groups of skaters is one of the oldest and more persistent ways of doing it (Borden 2001). Using the city can be a way of reimagining it, and of challenging its traditional meaning: it is the case of the dérive of situationists (Bonnet 1989), but also of playful-but-critical uses of the city spaces such as parkour, political flash-mobs, park(ing) day and similar activities (Hassan & Thibault 2020).

Finally, there are several practices of unauthorized, bottom-up, urban writing. Many of these actions have been regrouped under the labels of DIY, tactical and spontaneous urbanism. Rooted in the US tradition of self-help and urban beautification efforts started by the municipal art and civic improvement movements of the mid-19th Century, DIY urbanism refers to small-scale interventions with grassroot origins. It is not a completely chaotic process, but it is often guided by activists that co-design these actions with the citizens themselves. These interventions aim at creating an urban environment that is responsive to citizens' needs by, for example, painting new pedestrian crossings or bike lanes (paint bombing), creating unauthorized urban parks (guerrilla gardening) or creating new paths in the city (DIY wayfinding) (Deslandes 2014, Finn 2014). Attempts of legitimizing and normalizing these practices have received harsh criticism and have been accused of creating a "favela chic" aesthetics (expression by Bruce Sterling, quoted in Deslandes 2012) or of becoming forms of "hipster gentrification", that tend to exclude marginalized individuals.

These practices feature artistic, playful and strongly creative approaches to urban spaces and can be described as examples of unintentional gamification based on paidia. In other words, while their objective is not that of gamifying urban spaces, they do make use of free and creative play that transforms the city to a "playground" in order to strategically reappropriate it. These actions often have a critical character, which questions the societal status quo and the urban writing of the government and municipality (Thibault 2019a).

In many cases these behaviors are considered illegal, compared to forms of vandalism and anti-social behavior and punished for that. The free and creative spirit behind these actions, however, has been regarded by many as a resource. In the realm of urban management, building on the assumptions of Guy Debord and The Situationist International (Bonnett 1989), several frameworks were born to justify and promote an integration of these activities in urban life. Approaches such as the Ludic City (Stevens 2007), Playable Cities (Nijholt 2017) and Urban Gamification (Thibault 2019b) challenge the way we think about the organizations of public spaces.

Lefèbvre (1991) claims that only in the Renaissance city existed a language - at the same time architectural, urbanistic and political - that was common to country people and townsfolk, to the authorities and to artists, and that allowed not only the reading of the city, but also to its construction. We believe that urban play, in a context of ludification of culture (Raessens 2006), has the potential to become such a language. Urban play indeed appears to be a powerful tool allowing citizens to exercise their right to the city and to participate creatively to city making. At the same time, however, these actions are hardly coordinated or informed about the bigger picture, and municipalities often oppose them and erase them from the public spaces.

3.3. Location-based and AR games in the augmented city

Not all games and gamified activities that take place in the city have political motivations. During recent years, anyone moving about in cities must have noticed how virtual objects and people chasing them have appeared in the cityscape. Games such as *Pokémon Go* and *Ingress* have introduced novel technology-mediated ways to experience the city. The augmentation of urban spaces though technologies, such as GPS and augmented reality, enables new ways

of interacting with the urban spaces, often in gameful or playful ways. Morphing cityscapes, or writing the city, becomes then available to citizens, if only in the virtual layers created with advanced technology. Several tools are available for citizens that want to interact freely and creatively with the city and its virtual extensions. For example, *Just a line* (Wilson 2018) is an augmented reality app developed by Google that allows citizens to draw 3D shapes in the virtual space and share videos of those drawings. Another app, *AR Graffiti Artist* (Asadi 2018, Gwilt 2018) allows artists to draw digital graffiti on walls which can then be seen by other citizens who have access to this virtual layer through the app. Examples also include enhancing existing graffiti by adding animations that can only be seen when looking at the graffiti through a display (EwTube 2019). Those applications allow citizens to leave their mark on the city - even if an evanescent one - yet they do not propose a value beyond mimicking activities that are already available to citizens in the physical space and do not explore the novel modalities of interaction that can be introduced by the location-based AR technology in terms of shaping the city spaces.

Augmenting the city scape is not only facilitated by end-user-oriented applications such as the apps discussed above. For example, projection mappings (Ekim 2011), which usually are dynamic visuals, carefully mapped to or projected on certain built structures, need expensive and complex setups. Projection mappings, although 2D, propose visually augmented environments. Most of those applications are for advertisement or art projects. Still, there are examples, such as interactive pathways, that use projection mappings as a way to promote different ways of interacting with the city such as *CITÉ MÉMOIRE* (Lemieux 2017). In this example, different types of dynamic patterns are projected to street grounds that would change as citizens walked through those streets. Projection mappings are good examples that show cityscapes can be augmented without needing mediator displays such as AR goggles or phones, yet they are limited to 2D surfaces. However, augmentation of the physical space can also be extended to 3D dimensional interventions by using the swarm drone technology. One interesting demonstration is the show performed during the SuperBowl finale, 2017, in which the drones created dynamic 3D visuals in the sky (Cow Missing 2017). This is followed by other examples where drones were used to form different types of shapes both for typing messages in the sky and visual performances that are becoming the next generation fireworks. Although, utilization of such technology varies and might also yield applications which might not be desirable by citizens, they demonstrate the ways augmenting cityscapes is possible without mediating interfaces.

Beyond interactive interventions through technology, augmenting cities also resulted in digital or hybrid playgrounds built on the physical environment. One of the most contemporary and popular examples of such an experience is *Pokémon Go* (Niantic 2016). *Pokémon Go* is a location-based game whose game world is built based on the real geographical data. In this game, players need to visit Pokestops, Gyms and discover new Pokémon by walking around the city. *Pokémon Go* can also be seen as a novel way to experience the city by increasing awareness of one's surroundings since many of the PokeStops are placed on attractions such as monuments, squares or even relatively hidden spots (such as seemingly unimportant and small statues). It also, although restrictively, allows citizens to participate in shaping the city. For example, there are cases where restaurant owners request a PokeStop near their restaurants (Zhang & Zhang 2018, Kacurov 2019, u/ephemeross 2017) or place Lures (additions which increase the probability of Pokémon's

emerging nearby) to attract people and thereby change the social context of the real space (Goldberg 2016). *Pokémon Go* is not the only example of location based games influencing city spaces, but there are other examples exploiting similar game mechanics such as, *Ingress* (Niantic 2012), *Harry Potter: Wizards Unite* (Warner Bros 2019) or *The Walking Dead: Our World* (Next Games 2019). City augmentations do not only allow digital game worlds which can be reached through the displays of smart phones, but there have also been implementations which allow playing games or experiencing playfulness by altering the built environment itself. For example, Tetris on a building, which uses the lights of flats as Tetrominos is an intriguing example (Oswaks 2012). Other examples include Nestle Contrex's advertisement targeting women, where groups of people try to play an animation projected onto the wall of a building by cycling on gym cycles placed on a street (Nestlé 2014) or stairs that are turned into piano keys (Volkswagen 2009) producing sound with each step. All these implementations demonstrate distinct ways of engaging citizens with the built environment of the city in a playful manner.

With the exponential transformation of cities towards "smart cities", where technology is embedded in all aspects of city management, new technological infrastructures have further extended the potential of urban gamification: portable sensors, wearable technologies (Hui et al. 2017) and mobile lidars (Jeong, Hwang & Watson 2018) promise to revolutionize the relationship between citizens, and cities even further. This is particularly evident in the case of *smart cities digital twins* (Mohammady & Taylor 2017) used by municipalities to visualize and understand human-infrastructure-technology interactions and to next design city management actions around them. The creation of these digital twins, however, requires constant data acquisition for them to become a close representation of reality based on which management decisions can be made. Citizens already create a great amount of data about city spaces: the city is permeated by all sorts of evaluative infrastructures (Kornberger et al. 2017): systems such as Airbnb, Uber and TripAdvisor which establish orders of worth for city spaces and services. These data are created through the collective labor of crowds but are nonetheless privately owned by singular owners of the data platforms through which they were created.

These examples of diverse ways of augmenting the cityscape, however, do not aim at empowering citizens and involve them in the process of city-making. They showcase forms of play related to both ludus and paidia, but their effects are limited to the singular activity at hand in itself, and do not have consequences on government nor the life of the city. They do not attempt to create occasions of city making but limit themselves to using the city as a resource: to exploit its morphological complexity and physical extension to create activities with no repercussion on it.

Nevertheless, these technologies and their uses constitute a valuable resource for engaging the citizens with the materiality of the city. They are effective in terms of starting interaction between the human and the city, even if they do not propose clear uses for encouraging or facilitating the participation of citizens in shaping cities. Therefore, the framework developed in this chapter proposes ways of using augmentation technologies and playful interaction to allow citizens active and continuous participation in the decision-making processes concerning cities.

4. Framework
4.1. The space for a new way of combining play and urban government

In the previous sections, we have explored a wide toolset of practices, perspectives and technologies that have been used in both bottom-up and top-down forms of urban government - or that show potential in doing so. If, as we claimed, play could become a new common language allowing for a democratic production of space, these are the building blocks that can be used to make it happen. All these tools by themselves, however, are insufficient.

We discussed how gamified e-participation attempts to use the engaging qualities of games in order to partially involve citizens in the processes of decision-making or for crowdsourcing data collection and how these attempts are still generally top-down, centered around ludus and hierarchical power relations, thus losing much of their potential effectiveness. We also discussed more free forms of playfully interacting with the city and reclaiming its public spaces; attempts that are highly creative but also uncontrollable and chaotic, and therefore more often criminalized than encouraged. Finally we have also reviewed how technologies such as GPS and AR are being used in games and in playful activities to enable new ways of relating and interacting with cities, although these experiences remain, up to now, rather inconsequential and do not contribute to rewriting the city.

The following figure should help us visualize the respective positions of these three types of relationships, in regard to their ability to shape the urban environment and the kind of play and power dynamics they involve.
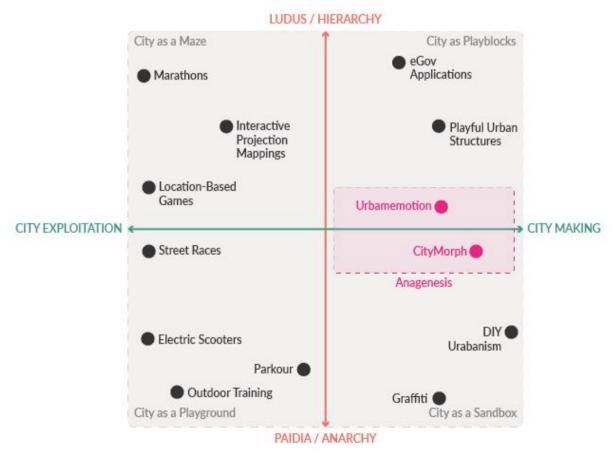

Figure 1: Mapping of initiatives to shaping cities and the place of Anagenesis between them.

On the vertical axis we positioned different tendencies in play (paidia and ludus) in relation to different ways of organizing power. We have labeled them "anarchy" and "hierarchy". This axis highlights the differences between top-down and bottom-up approaches to urbanism and urban government within different playful interventions. The horizontal axis differentiates between city making and city exploitation. These are two distinct forms of producing space (Lefèbvre 1991) City making indicates a larger degree of authorship on the urban spaces: the activities on its side are able to modify, directly or indirectly, the physical reality of the city. City exploitation, on the other hand, indicates activities that make use of what is already there: they do not attempt to change the city, but they use it as a space for play, they exploit the streets, buildings and infrastructures in it to give birth to a playful activity. These two axes delineate four different polarities: cities as mazes, playgrounds, playbloks and sandboxes:

- Cities are used as *playgrounds* in activities close to City Exploitation and Paidia. They are spaces dedicated to free-play. In this area, citizens do not aim to contribute to the existing state of the city but play around it. However, this play is not very structured as the city promises many tools that can be exploited by citizens in an unpredictable way.
- Cities are used as *mazes* in activities related to Ludus and City Exploitation. Mazes are structures devoted to playful explorations but whose boundaries are strictly drawn. In that sense, location-based games such as *Pokémon Go* and applications such as interactive projection mappings use the cities as mazes. They can only be used in their dedicated spaces but provide to the players a structured series of rules to follow and in-game values.
- Cities are used as *sandboxes* in activities based on City Making and Paidia. Sandboxes are highly malleable space for free play. These activities, then are able to reshape the urban fabric, although in an unstructured way. Guerilla or DIY Urbanism and graffities are good examples of such activities.
- Cities are used as a set of *playblocks* in activities that feature City Making and Ludus. Citizens here are allowed to give inputs through a wide array of applications, but the borders are still defined by decision makers, planners and designers. Citizens here can make the city only on a conceptual level, while the real implementations are still in the hands of decision makers. Examples of such activities are playful structures around the city that aims at getting the opinion of citizens (as *ballotbins*) or e-participation gamified applications that presents several pre-designed modalities for getting feedback, recommendations or opinions.

If we position the existing initiatives described in the previous section, our schema highlights a gap: a need for an approach that is capable of drawing both from ludus and paidia - and thus mediates hierarchical approaches to urban government - and allows citizens to make the city, that is, to rewrite the urban spaces and reclaim their rights to the city. This approach will be able to make use of the technologies that are already being implemented for augmenting city pieces through interactive experiences and games but will also mediate e-participation and urban play. This is where Anagenesis is built.

Reconciling these two extremities is not impossible. Ludus and paidia, after all, are not irreconcilable opposites but are in a continuous reciprocal tension. Even the most structured forms of play are susceptible to reinvention, cheating or parody, and even the freest forms of

play tend to create structures, to crystallize customs and become stable. A similar point can be made for the perspectives that we have labelled "hierarchy" and "anarchy". The latter term, in particular, has to be considered in its wide meaning, as an absence of authority. It is not limited to political anarchism, but also including extreme forms of free-market and deregulation. From this perspective we can connect our dichotomy to one of the most foundational discussions on organizational model: the discussions on markets vs hierarchies - that is the discussion on structures or normative of organizing between bottom-up (i.e. "the spontaneous order") and top-down (i.e. "the intentional order") governance (Williamson 1975; Williamson 2005; Entwistle et al. 2007). We have argued that organizing modes of play are formed on a dialectic between bottom-up (i.e paidia/free play) and top-down (i.e. ludus/structured play). Our central thesis is that, while both modes of bottom-up and top-down have their benefits and detriments, be it in the domain of play or organizing, they do not constitute a holistically sustainable overall approach to gameful urban governance when practiced in exclusion of the other. We argue that a similar point could be made for Williamson's markets and hierarchies, and that it is possible to find a sustainable synthesis addressing the problematic issues of both. In fact, theoretical advancements have already spawned both to describe and to address this resultant reality. In the realm of organizing such a new form of organizing has been conceptualized as "bazaar" organizing (Demil & Lecocq 2006). Bazaar organizing takes inspiration from contemporary praxis of coordinating organizations such as open source and (copyright) pirating communities, where there exists a high degree of openness and transparency as well as an emergent incentive system that is not strictly mandated top-down; therefore, it rather being enabling than controlling.

The bazaar is not the market. The latter is based on *laissez-faire* dynamics and guided by commercial strategies aiming solely at the creation of economical value - the penetration of the market in medieval Western cities, according to Lefèbvre (1991) was the very beginning of the profound subversion of urban spaces that brought to the present urban crisis. Bazaar organization, instead, escapes these dynamics, and replaces them with a collaborative, sharing-economy oriented attitude. It does not aim at the creation of a hierarchical power regulating the organization from above, but instead proposes forms of coordinated self-organization and co-production. In other words, it moves the focus away from the products (at the center of market organizations) and from the institutions (central for hierarchical organization) and moves it to the community and its dynamics.

Anagenesis, hence, is a *bazaar city*, positioned at the heart of this tension, negotiating between creativity and needs of the citizens, structures and democratic practices of the government through playful interventions. This leads to a synergy between the engaging and creative features of urban play and the democratic and efficient character of e-participation, while avoiding top-down or conflictual relations between the government and citizens.

Anagenesis is the embodiment of this framework: a continuously self-regenerating city, where every citizen participates in a democratic and creative way in shaping the urban areas where they live, through currently available technologies and strategies: gamification, games, e-participation, crowdsourcing, smart city infrastructure, and digital twins. In Anagenesis, the three rights to the city we proposed are facilitated by several means.

The right to write the city. While average citizens often have little to no possibility of acting on the city, Anagenesians hold a high degree of power in writing their cities, both, directly and indirectly. Citizens can reshape and modify the digital twins of the city, creating their own versions and sharing them with other citizens. These virtual instances can be shared also with the urban governance to convey the citizens preferences and ideas. Innovative gamified forms of e-participation and e-government will allow the citizens to select cooperatively the directions to city should take and to visualize them directly on the digital twin. These decisions will then be taken into account in democratic decision-making and management processes - in this way, the citizens of Anagenesis have a greater power to indirectly write the city through their higher involvement in decision making.

On the other hand, many formal city projects, as well as bottom-up initiatives, can be directly implemented by citizens of Anagenesis, allowing them to additionally, directly, exercise their right to writing the city.

The right to be represented in the city; Cities built and managed through a high level of citizen writing grow to be highly shaped by their citizens. They become a representation of their inhabitants and their inhabitants are represented in them with all their diversity. By allowing citizens higher levels of writing their city and ensuring that each group and individual has access to the technological facilitators to participate in the creative and decision-making processes of the urban government, Anagenesis is strengthening citizen's right to be represented in Anagenesis.

The right to use the city; There are many inhibitors to the right to use the city. Architectural barriers and inaccessible infrastructure inhibit city use to inhabitants with various disabilities. Unfriendly, scary or abandoned spaces often repel individuals from roaming them - something that is even more true if we take in consideration the gender dimension of urban experience (Dymén & Ceccato 2011). Even perceptually friendly public spaces, such as parks, can become unused if the spaces are unengaging. Anagenesis facilitates city use in several ways. First, democratic city writing will allow the citizens themselves to reshape the city around their needs, without help. This will facilitate equal accessibility to all its inhabitants. Second, playful initiatives will be able to valorize inhabitable or unusable spaces giving them new functions. Third, urban play can have a reverse "broken window" effect making urban spaces friendlier, warmer and safer for all.

In order to see some possible practical applications of our framework and their relations to the right to the city, in the following section, we showcase two different scenarios representing specific projects that take place in Anagenesis.

4.2. Anagenesis

Anagenesis is the embodiment of the framework we delineated. It is governed through a blend of urban play, augmented city technologies, and e-participation, and its citizens are active participants in shaping the city. Anagenesis is a city that affords flexible ways to produce space to its inhabitants. It encompasses voluntary organizational structures powered by gamified applications, and it is augmented by customizable and interactive digital play spaces. What sets apart Anagenesis from other cities is the continuous creation of meaningful

spaces where citizens can self-organize and interact with the city in novel ways thanks to new technologies and the gamified design structures.

Self-organization is a key aspect of the city: according to the principles of bazaar organization, the primary role of the city's government is to facilitate the creation of spaces for creative interaction, self-representation and free collaborative reorganizations of the city. Every Anagenesian is a decision-maker, and the city officials work to facilitate city-making by forming appropriate environments, creating motivational applications and ensuring open information channels through deeply embedded city/citizen technologies and gamified applications.

Bazaar organization and the continuous presence of forms of play balanced between ludus and paidia ensures the balance between top-down and bottom-up approaches to urban government. The balance is kept through flexible and amorphous digital spaces designed by city officials where the citizens can freely write and rewrite the city. This digital space forms a path for direct citizen involvement in shaping the city with opportunities beyond what can be provided only in the physical layer and also allows for careful plans where the voice of citizens is of cardinal importance in the decision-making process. In this section, we illustrate some scenarios that show how participation in Anagenesis works through the dimensions of this framework in concrete applications.

4.2.1 CityMorph
Citizens traditionally participate in the decision-making process indirectly by providing data both through the use of technology such as smartphones, wearables or even LiDARs and through communicating their opinions on particular subjects through e-participation methods. The data produced by citizens, then, can be used in the design of the city by decision-makers such as managers, city planners or designers. However, citizens usually do not know or understand how their data were incorporated in the design, and thereby, their influence is usually invisible. While, in some city projects citizens have a chance to see what is to come, as it has happened in Tampere 5-star City Center project[3], citizens are often seen to have limited to no power to effect the city-plan itself or the design of the environment. On the other hand, citizens of Anagenesis have a direct impact on the design of the city and actively partake in its design practices.

Using our framework as a lens, Anagenesis is formulated as a city that has a seamless, functional and meaningful transition between the digital and the physical forms of the environment allowing citizens to directly participate in urban design, and to co-create the city in a playful way. Anagenesis, with this particular implementation, answers the following question: "How can we make citizens the designers of the city and engage them with the planning practice?" The scenario "City Morph", depicted here, re-invents the design process of a city square by making citizens participate in the design activity. CityMorph envisions that citizens have full access to a virtual digital twin of the said square. This virtual version gives them the capability to morph the environment however they want. They can transform buildings into different shapes or add new ones. They can remove all the built environment or dramatically alter the landscape. They may go for a design that is more subtle in nature or

---

[3] See https://www.tampere.fi/en/housing-and-environment/city-planning/development-programs/five-star-city-centre.html

turn the place into an attraction center filled with art objects. Surely, there are no limits to imagination, but design practice is limited by reality. Feasibility of designing a new square may not be visible to a regular citizen while it can be the primary concern for decision-makers. Gamification, in CityMorph, introduces a playful way of designing the square with resource management mechanics. While designing the new square, citizens are asked to comply with targets such as a maximum traffic density, desired population in the square, environmental impact and so on. In this way the free paidia creativity of imagining the square is directed towards effective and realistic implementations that make use of ludus forms of play.

All the instances of the square created by the citizens will be available to all citizens to access, experience and comment on, ensuring their right to use the (digital) city, and creating opportunities for interaction and coordination between citizens themselves, who can then choose to work collaboratively on the same instance, co-creating urban spaces together. All the data produced along the way (the different decisions made in the design process, the final versions, the experiences of the citizens in the augmented version of the city, the preferences indicated democratically by the citizens to different possible projects) provide clues, inspiration and direction to city officials about how to proceed with the new design. The citizens then see their ideas and designs become tangible products in the urban spaces, fulfilling their need to be co-authors of the urban spaces and to be represented in them. Moreover, the implementation of the game mechanics will create informed citizens who are knowledgeable about the variety of limitations related to specific design decisions. The cumulation of different designs, at the same time, creates a more transparent decision-making process where all citizens, even if they did not participate in the decision-making process, can monitor how the decisions correspond to what citizens actually wanted.

With the CityMorph scenario, our intention is to portray how smart cities might be structured in a way that will reinforce the rights of the citizens in/to the city. First of all, CityMorph proposes several ways in which citizens can be represented in the design of the city through their decisions about the environment. Collective movement of shaping the city will be contributed by many citizens and the process of change can be tracked by them. CityMorph also provides flexibility for using, especially, the digital form of the city. With technology getting integrated every bit of the city, the citizens right to the "digital city" (Foth et al. 2015) is also a question. Although citizens play a remarkable role in forming this digital layer of the city, their reach to that layer is still quite limited. In that sense, CityMorph illustrates an engagement with the city, which is transparent and visible, and gives control to citizens for shaping the data they left in the city. Obviously, CityMorph emphasizes the right of the citizens on writing the city the most. However, while allowing unlimited intervention with the digital form of the city, it also aims to inform the citizens about the factual outcomes of their interventions. CityMorph aims to create an environment where citizens and decision-makers can act towards forming an environment both livable and feasible. It allows citizens to question decisions with informed arguments and render governors more responsible for their acts. Mainly, it aims at utilizing technology and games for effectively involving citizens in the making of the city and acquire their rights to the city.

4.2.2 Urbanemotion
Our framework also reveals how data that is continuously being collected by and from citizens, can be employed in a transparent and playful way. Currently, smart cities advocate for a comprehensive data collection to increase the effectiveness of infrastructures and

management, tracking for example the location of citizens. However, in Anagenesis, data is transparently employed on many levels. Urbanemotion is an application developed by the municipality of Anagenesis in collaboration with the *Anagenesian Association for Mental Health*, and makes use of body sensor technologies to shape the emotional map of the city through a collaborative social game.

There are several studies that aim at understanding the emotional significance of places in the city (Nold 2009). These studies usually rely on self-reports and the purpose of such mappings is not always clear. Still, they create another virtual layer of the city and proposes a new lens to interpret city spaces. In this direction, Urbanemotion aims to answer the question "How can we invent new ways of playing with the city while creating new urban design paradigms?" Urbanemotion consists of a dynamic emotional map of Anagenesis that informs citizens about the "mood" of certain urban areas. Those moods are determined by the data collected by consensual citizens via body sensors such as wearables combined with self-reports through health applications. The aggregation of the emotions collected from citizen builds the "mood" of a certain area.

Citizens, through their Urbanemoton interface, can visualize city areas and their corresponding moods. The aim of a game on top of this interface, is to improve the emotions of some specific areas by visiting them and performing activities that will transform the current dominant emotion of the area to another one. Each week, teams of players are assigned a specific problematic area of Anagenesis (a particularly stressful business street, a depressed neighborhood, a high-traffic zone causing rage etc.) and a certain target mood (calm, joy, relaxation, etc.): the objective of the game is to transform the mood of that area to the target mood. Citizens therefore will partake in creative and playful activities aiming at reshaping the "moodscape" of their city. The more citizens participate in said activities, the more the emotional-scape of said city area will shift. Urbanemotion, from the citizens' perspective, creates an awareness that requires exploration of both the self, the other and the environment. They are able to assess different parts of the city with distinct points of views and participate in the making of the city with their whole body and mind. Access to the emotional maps of the city allows them to know their surroundings in a more intimate way, while the possibility of influencing them with their own moods and with their actions ensure their right to be represented in the city and to write it, not physically, but emotionally.

The government of Anagenesis on the other hand obtains a detailed analysis of emotions that cityscape and the activities particularly related to those spaces can induce. This creates a complete novel layer of city-analysis that can be incorporated in urban design and planning and is highly related to the aesthetic and experiential qualities of the city. The union of forms of play related to ludus (determining the areas and the target moods) and paidia (the playful interventions aiming to improve the urban moodscape) balance the anarchic creativity of free play, without resulting in the emotional micromanaging of citizens.

Urbanemotion creates a previously unknown level of information in which citizens can be represented with their emotions, encourages them to use the city in inventive ways and more depth and create ways to rewrite emotions induced by the city. On the other hand, this new application available to citizens of Anagenesis shows that augmenting cities and citizens is

also about discovering new ways of e-participation which wouldn't be feasible without these technologies. This novel type of participation also creates an additional and an unfamiliar way of understanding the city that can possibly allow for new design paradigms and methods. We also need to emphasize that using games and play holds a particular importance here, as they are particularly effective tools for narrating and animating an imaginary layer such as the emotional-scape of the city. Urbanemotion is an example showing that augmented city technologies and games reveal unconventional ways of e-participation and thereby yield in extended interpretations of places for designing them.

Anagenesians are well aware that, with the data generating technologies getting deeply embedded in cities and citizens' lives, exploitation of this data also becomes more probable. In that sense, while we can imagine many different playful activities related to emotions or participation of citizens, collected data can also allow an extremely hierarchical-city making by completely ignoring the participation of citizens. For example, profiling of emotions may result in the systematic isolation of some areas instead of working towards improving the mood. Risk of utilizing gamification for manipulating people to hand over information that they would not normally share may also equally be possible. Emotional tracking technologies can raise several ethical issues, and it is easy to imagine them being applied in exploitative and unfair ways. This example, however, shows how a playful and democratic implementation of such technology, attentive to the citizens' right to the city, might be a way of governing these technological innovations. In our framework, the position of Anagenesis does not only represent a functional combination of participation, play and management dimensions but it also conveys our understanding of collecting and using data in the right way. In Anagenesis, collection is transparent and the reach of citizens to this data is unlimited. The role of the hierarchy (i.e. planners, officials, governors) is not only utilizing the data for the good of the citizens but also protecting it and making every step of its collection transparent. In the end, every technology and advancement may also lead to dark patterns of implementation. This chapter and the speculated applications, then, are not advocating for an a-critical integration of these technologies into our lives but a recipe for forming an understanding of how those three concepts can come together for providing a more democratic and playful environment in a responsible way. Although we can envision that gamification and advances in sensor technologies can foster the active, informed and continuous participation of citizens to the state of physical and the digital city, in each step of the implementation, security and privacy of citizens need to be considered by all stakeholders.

4. Discussion and conclusions

Our framework, exemplified in our two scenarios of Anagenesis, aims at addressing the limitations of current approaches to playful interventions in the city spaces. To avoid the most anarchic effects from urban play and top-down approaches of gamified e-participation, we propose to make large use of augmented city technologies, which are already being used by games and various initiatives to produce creative and playful spaces for citizen urban interventions. As shown in figure 1, our framework balances ludus and paidia, anarchy and hierarchy, by proposing a gentle direction and co-organization of a play process that still remains creative and free. At the same time, while the city is also a *resource* for these activities, they also tend toward *city making*, having real-life effects on the cityscape and therefore ensuring the rights to the city for all participants and the population at large.

While some of the technologies included in our scenarios are not yet common (e.g. emotional mapping), they are not far away in the future. IoT, smart cities and transhuman technologies are likely to have a profound impact on the urban fabric in the years to come: our framework offers a possible way of making use of them in a democratic, creative and ethical way, by using them to involve citizens in the processes of city making, and not just to exploit them as sources of data (as is happening, for example, with social media).

Anagenesis is a fictional city, but it is also a possible city. It is an alternative to the impoverishment of urban spaces, that is being brought about by gentrification, privatization of public spaces, globalization and mass tourism. It aims to be a blueprint for making our cities more inclusive and our citizens more engaged.

Acknowledgements

References

Al-Yafi, K., & El-Masri, M. (2016). Gamification of e-Government Services: A Discussion of Potential Transformation. In Proceedings of the 22nd Americas Conference on Information Systems (AMCIS2016: Surfing the IT Innovation Wave).

Ameel L, Tani, S (2012) Parkour: creating loose spaces? Geografiska Annaler: Series B, Human Geography 94(1): 17–30. doi.org/10.1111/j.1468-0467.2012.00393.x

Argiolas, G., Cabras, S., Dessì, C., Floris, M. (2009) Challenges for new models of territorial governance: Learning from the experience of Italian LAGs. Academy of Management 2009 Annual Meeting: Green Management Matters, AOM 2009.

Arnstein, S. R. (1969). A ladder of citizen participation. Journal of the American Institute of Planners, 35(4), 216–224.

Asadi, A. R. (2018). AR Graffiti Artist app brings a new world for the Street Artists. Retrieved December 6, 2019, from Medium website: https://medium.com/@AmirrezaAsadi/ar-graffiti-artist-app-brings-a-new-world-for-street-artist-ef403afe093e

Asquer, A. (2014). Not Just Videogames: Gamification and its Potential Application to Public Services. Digital Public Administration and E-Government. In Professor Edward F Halpin (Ed.), Digital public administration and E-government in developing nations: Policy and practice(pp. 146– 165). IGI Global.

Bingham, L. B., Nabatchi, T., & O'Leary, R. (2005). The new governance: Practices and processes for stakeholder and citizen participation in the work of government. Public Administration Review, 65(5), 547–558.

Bista, S. K., Nepal, S., Colineau, N., & Paris, C. (2012). Using gamification in an online community. Proceedings of the 8th International Conference on Collaborative Computing: Networking, Applications and

Worksharing (CollaborateCom)(pp. 611-618). IEEE.

Bista, S. K., Nepal, S., Paris, C., & Colineau, N. (2014). Gamification for Online Communities: A Case Study for Delivering Government Services. International Journal of Cooperative Information Systems, 2325(2), 1441002-1-1441002–1441025.

Bonnett A (1989) Situationism, geography, and poststructuralism. Environment and Planning D: Society and Space 7(2): 131–146. https://doi.org/10.1068/d070131

Borden I. (2001) Skateboarding, Space and the City: Architecture and the Body. Oxford: Berg. Carreira, P., Mendes, G., Barroca, B., Amaral, V., Honkapuro, S., & Prada, R. (2017). Energy behavior engagement in smart urban environments. Energy Procedia, 142, 2080-2088. De Certeau (1980). L'invention du quotidien: Arts de faire (Vol. 1). Paris: Union Générale d'Editions. English version: The practice of everyday life, trans. Steven Rendall (Berkeley, CA: University of California Press, 1984).

Cow Missing (2017). Intel's 500 Drones - Super Bowl LI - LED Light Show Amazing Technology. Retrieved December 6, 2019, from Youtube website: https://www.youtube.com/watch?v=mk7TsDNuhs0&t=3s

Creemers, R. (2018). China's social credit system: an evolving practice of control. Available at SSRN 3175792.

Daft, R.L. (2010) Organization Theory and Design. Cengage Learning, Mason, OH.

Dargan, T., & Evequoz, F. (2015). Designing engaging e-government services by combining user-centered design and gamification: a use-case. *Proceedings of the 15th European Conference on EGovernment 2015: ECEG 2015*, 70–78. Academic Conferences Limited.

De Lange, M. (2015). The playful city: using play and games to foster citizen participation.

Demil, B., & Lecocq, X. (2006). Neither market nor hierarchy nor network: The emergence of bazaar governance. Organization studies, 27(10), 1447-1466.

Deslandes A (2012) 'What Do Pop---up shops and Homelessness have in Common?', The Global Urbanist, globalurbanist.com/2012/02/14/diy---urbanism---homelessness.

Deslandes A (2014) Exemplary Amateurism: Thoughts on DIY Urbanism. Cultural Studies Review 19(1): 216–227. https://doi.org/10.5130/csr.v19i1.2481

Dryzek, J. S., Bächtiger, A., Chambers, S., Cohen, J., Druckman, J. N., Felicetti, A., Fishkin, J. S.,Farrell, D. M., Fung, A., Gutmann, A., Landemore, H., Mansbridge, J., Marien, S., Neblo, M. A., Niemeyer, S., Setälä, M., Slothuus, R., Suiter, J., Thompson, D., & Warren, M. E. (2019). The crisis of democracy and the science of deliberation. Science 363(6432), 1144-1146.

Duke, R. D. (2000). A personal perspective on the evolution of gaming. Simulation & Gaming, 31(1), 79-85.

Duke, R. D. (2011). Origin and evolution of policy simulation: A personal journey. Simulation & Gaming, 42(3), 342-358.'

Dymén, C., & Ceccato, V. (2011). An international perspective of the gender dimension in planning for urban safety. In The urban fabric of crime and fear (pp. 311-339). Springer, Dordrecht.

Ekim, B. (2011). A video projection mapping conceptual design and application: Yekpare.

Entwistle, T., Bristow, G., Hines, F., Donaldson, S., & Martin, S. (2007). The dysfunctions of markets, hierarchies and networks in the meta-governance of partnership. Urban Studies, 44(1), 63-79.

EwTube, E.-. (2019). AUGMENTED REALITY - AR GRAFFITI ART SHOW - FAT HEAT - How to Vandalize Vandalism - Ewkuks. Retrieved December 6, 2019, from Youtube website: https://www.youtube.com/watch?v=1G0BGrTHSgM

Finn D (2014) DIY urbanism: implications for cities. Journal of Urbanism: International Research on Placemaking and Urban Sustainability 7(4): 381–398.

Geurts, J. L., Duke, R. D., & Vermeulen, P. A. (2007). Policy gaming for strategy and change. Long Range Planning, 40(6), 535-558.

Forster, A. M., Vettese-Forster, S., & Borland, J. (2012). Evaluating the cultural significance of historic graffiti. *Structural Survey*.

Foth, M., Brynskov, M., & Ojala, T. (2015). Citizen's right to the digital city. Berlin: Springer. doi, 10, 978-981.

Glaser, M. A., & Denhardt, R. B. (2000). Local government performance through the eyes of citizens. Journal of Public Budgeting, Accounting & Financial Management, 12(1), 49-73.

Goldberg, E. (2016). Restaurants Are Cashing In on Pokémon Go Madness. Retrieved December 6, 2019, from Bon Appétit website: https://www.bonappetit.com/entertaining-style/trends-news/article/Pokémon-go-pokestops-restaurants-bars-coffee-shops

Grant, M. (1991). The Founders of the Western World: a history of Greece and Rome. Scribner.

Greenfield, A. (2013). Against the Smart City: A Pamphlet. This is Part I of" The City is Here to Use". Do projects.

Gwilt, I. (2018). Augmented reality graffiti and street art. In Augmented Reality Art (pp. 227-236). Springer, Cham.

Haleva-Amir, S. (2016). Not all about that Facebook: political campaigns and civic engagement in the 2015 elections. Israel Affairs, 22(3–4), 711–726.

Hamari, J. (2019). Gamification. In G. Ritzer & C. Rojek (Eds.), The Blackwell Encyclopedia of Sociology. New York John Wiley & Sons.

Hamari, J., Sjöklint, M., & Ukkonen, A. (2016). The sharing economy: Why people participate in collaborative consumption. Journal of the Association for Information Science and Technology, 67(9), 2047-2059.

Harvey, D. (2012). Rebel cities: From the right to the city to the urban revolution. Verso books.

Harviainen, J. T., & Hassan, L. (2019). Governmental Service Gamification: Central Principles. International Journal of Innovation in the Digital Economy (IJIDE), 10(3), 1–12. https://doi.org/10.4018/IJIDE.2019070101

Harviainen, J. T., Lainema, T., & Saarinen, E. (2014). Player-reported impediments to game-based learning. Transactions of the Digital Games Research Association, 1(2).

Hassan, L. (2017). Governments Should Play Games: Towards a Framework for the Gamification of Civic Engagement Platforms. Simulation and Gaming, 48(2), 249–267. https://doi.org/10.1177/1046878116683581

Hassan, L., & Hamari, J. (2019). Gamification of e-participation A Literature Review. Proceedings of the 52ndHawaii International Conference on System Sciences (HICSS'52),3077-3086, Maui HI, USA.

Hassan, L., & Hamari, J. (in press). Gameful civic engagement: a literature review of gamification in e-participation. Government Information Quarterly.

Hassan, L., Harviainen, J. T., & Hamari, J. (2018). Enter Hogwarts: Gamified Education Lessons from the Wizardlings World of Harry Potter. In Proceedings of the 2nd International GamiFIN Conference (GamiFIN2018) (pp. 30–39). Pori, Finland.

Hassan, L., & Thibault, M. (2020). Critical Playable Cities. In N. Arton (Ed.), Making Smart Cities More Playable. Gaming Media and Social Effects. Singapore: Springe.

Holston, J. (2009). Insurgent citizenship: Disjunctions of democracy and modernity in Brazil. Princeton university press.

Hui, T. K., Sherratt, R. S., & Sánchez, D. D. (2017). Major requirements for building Smart Homes in Smart Cities based on Internet of Things technologies. Future Generation Computer Systems, 76, 358-369.

Jeong, N., Hwang, H., & Matson, E. T. (2018, March). Evaluation of low-cost LiDAR sensor for application in indoor UAV navigation. In 2018 IEEE Sensors Applications Symposium (SAS) (pp. 1-5). IEEE.

Kacurov, D. (2019). Pokémon Go Sponsored PokeStops now have Sponsored Field Research Tasks. Retrieved December 6, 2019, from Future Game Releases website: https://www.futuregamereleases.com/2019/06/Pokémon-go-sponsored-pokestops-now-have-sponsored-field-research-tasks/

Kazhamiakin, R., Marconi, A., Perillo, M., Pistore, M., Valetto, G., Piras, L., Avesani, F., & Perri, N. (2015). Using gamification to incentivize sustainable urban mobility. In 2015 IEEE First International Smart Cities Conference (ISC2) (pp. 1-6). IEEE.

Klamert, K., & Münster, S. (2017). Child's Play - A Literature-Based Survey on Gamified Tools and Methods for Fostering Public Participation in Urban Planning. In International Conference on Electronic Participation ePart 2017 (pp. 24–33). Springer, Cham. https://doi.org/10.1007/978-3-319-64322-9_3

Koivisto, J., & Hamari, J. (2019). The Rise of Motivational Information Systems: A Review of Gamification Research. International Journal of Information Management, 45, 191–210.

Koivisto, J., Malik, A., Gurkan, B., & Hamari, J. (2019). Getting Healthy by Catching Them All: A Study on the Relationship between Player Orientations and Perceived Health Benefits in an Augmented Reality Game. In Proceedings of the 52nd Hawaii International Conference on System Sciences.

Kornberger, M., Pflueger, D., & Mouritsen, J. (2017). Evaluative infrastructures: Accounting for platform organization. Accounting, Organizations and Society, 60, 79-95.

Lee, J., & Kim, S. (2014). Active citizen e-participation in local governance: Do individual social capital and e-participation management matter? Proceedings of 47th Hawaii International Conference on System Sciences (HICSS47), 2044–2053.

Lefèbvre H (1968) Le Droit à La Ville. Anthropos, Paris

Lefebvre, H., & Nicholson-Smith, D. (1991). The production of space (Vol. 142). Blackwell: Oxford.

Lefebvre, H. (1996). Writings on cities, translated by Kofman, E., & Lebas, E.. Oxford: Blackwell.

Lemieux, M., Pilon, V., & Bouchard, M. M. (2017). CITÉ MÉMOIRE. Retrieved December 6, 2019, from Montreal For 91 Days website: http://www.montrealenhistoires.com/en/cite-memoire/

Losh, L (2009) Virtualpolitik: An Electronic History of Government Media-Making in a Time of War, Scandal, Disaster, Miscommunication, and Mistakes, MIT Press, Cambridge, MA.

Lotman, Y. (1990) Universe of the Mind, a Semiotic Theory of Culture, I.B. Tauris & Co, London.

Lynch, K. (1960) The Image of the City, MIT press Cambridge.

Macintosh, A. (2004). Characterizing E-Participation in Policy-Making. In Proceedings of the 37th Hawaii International Conference on System Sciences (HICSS-37)(pp. 117–126). IEEE. http://doi.org/10.1109/HICSS.2004.1265300

Mahnič, N. (2014). Gamification of politics: start a new game!. Teorija in praksa, 51(1).

Mayer, I. S. (2009). The gaming of policy and the politics of gaming: A review. Simulation & Gaming, 40(6), 825-862.

Meng, J. J., Zhang, Y. R., & Zhou, P. (2010). Ecological vulnerability assessment of the farming-pastoral transitional zone in northern China: A case study of Ordos city. Journal of Desert Research, 30(4), 850-856.

Mohammadi, N., & Taylor, J. E. (2017, November). Smart city digital twins. In 2017 IEEE Symposium Series on Computational Intelligence (SSCI) (pp. 1-5). IEEE.

Morschheuser, B., & Hamari, J. (2019). The gamification of work: Lessons from crowdsourcing. Journal of Management Inquiry, 28(2), 145-148.

Morschheuser, B., Hamari, J., Koivisto, J., & Maedche, A. (2017). Gamified Crowdsourcing: Conceptualization, literature review, and future Agenda. International Journal of Human-Computer Studies, 106, 26-43.

Mäyrä, F. (2017). Pokémon GO: Entering the ludic society. Mobile Media & Communication, 5(1), 47–50.

Nahirny R. (2019) Google's cars and visual resistance in urban space. ΠΡΑΞΗΜΑ. Journal of Visual Semiotics 2 (20): 33-41.

Nestlé. (2014). Nestlé Contrex Commercial: "Ma Contrexpérience." Retrieved December 6, 2019, from Youtube website: https://www.youtube.com/watch?v=GimoLDYI_JE

Next Games. (2019). The Walking Dead: Our World. Retrieved from https://www.thewalkingdeadourworld.com/.

Niantic Labs. (2012) Ingress.

Niantic Labs. (2016) Pokémon Go.

Nijholt A (2017) Playable Cities the City as a Digital Playground. Springer. doi.org/10.1007/978-981-10-1962-3_1

Nold, C. (2009). Emotional cartography. Bio Mapping website.

Olszewski, R., Turek, A., & Łączyński, M. (2016). Urban Gamification as a Source of Information for Spatial Data Analysis and Predictive Participatory Modelling of a City's Development. 5th International Conference on Data Management Technologies and Applications. SCITEPRESS.

Oswaks, M. (2012). MIT Students Hack Building, Play Tetris. Retrieved December 6, 2019, from https://gizmodo.com/mit-students-hack-building-play-tetris-5904520

Paskaleva, K. A. (2009). Enabling the smart city: The progress of city e-governance in Europe. International Journal of Innovation and Regional Development, 1(4), 405-422.

Prandi, C., Roccetti, M., Salomoni, P., Nisi, V., Nunes, N. J., & Tools Appl, M. (2017). Fighting exclusion: a multimedia mobile app with zombies and maps as a medium for civic engagement and design. Multimedia Tools and Applications, 76(4), 4951–4979. https://doi.org/10.1007/s11042-016-3780-9

Raessens, J. (2006). Playful identities, or the ludification of culture. *Games and Culture*, *1*(1), 52-57.

Seeburger, J., Foth, M., & Tjondronegoro, D. (2015). Digital design interventions for creating new presentations of self in public Urban places. In Citizen's Right to the Digital City (pp. 3-21). Springer, Singapore.

Stevens, Q. (2007). The ludic city: exploring the potential of public spaces. Routledge.

Thibault M (2019a) "Punk Gamification" in Proceedings of the 3rd International GaminFIN Conference (GamiFIN 2019), CEUR-WS: 58-69.

Thibault M (2019b) Re-interpreting Cities with Play Urban Semiotics and Gamification. Springer, Cham pp 276–285. doi.org/10.1007/978-3-030-06134-0_32

Toots, M. (2019). Why E-participation systems fail: The case of Estonia's Osale. ee. Government Information Quarterly.

u/ephemeross. (2017). Making my business a sponsored pokestop location? Retrieved December 6, 2019, from Reddit website: https://www.reddit.com/r/TheSilphRoad/comments/6r3sm7/making_my_business_a_spon sored_pokestop_location/

Vesa, M., Hamari, J., Harviainen, J. T., & Warmelink, H. (2017). Computer games and organization studies. Organization Studies, 38(2), 273–284. https://doi.org/10.1177/0170840616663242

Volli, U. (2008) "Il testo della città — problemi metodologici e teorici", in M. Leone ed. Lexia 1–2, Aracne, Rome, pp. 9–12.

Warner Bros. (2019). Harry Potter Wizards Unite. Retrieved December 6, 2019, from https://www.harrypotterwizardsunite.com

Williamson, A. (2007a). Empowering Communities to Action: Reclaiming Local Democracy Through ICT. Proceedings of theCommunity Informatics Research Conference, Prato.

Williamson, B. (2017b). Decoding ClassDojo: psycho-policy, social-emotional learning and persuasive educational technologies. Learning, Media and Technology, 42(4), 440–453.

Williamson, O. E. (1975). Markets and hierarchies. New York, 2630.

Williamson, O. E. (2005). The economics of governance. American Economic Review, 95(2), 1-18.

Wilson, M. (2018). Google's New Experiment Lets You Tag Digital Graffiti In The Real World. Retrieved December 6, 2019, from Fastco Company website: https://www.fastcompany.com/90164445/googles-new-experiment-lets-you-tag-digital-graffiti-in-the-real-world

Woodworth, M. D. (2015). Ordos Municipality: A market-era resource boomtown. Cities, 43, 115-132.

Volkswagen. (2009). The Fun Theory 1 – Piano Staircase Initiative | Volkswagen. Retrieved December 6, 2019, from Youtube website: https://www.youtube.com/watch?v=SByymar3bds

Wang, D., & Zhang, X. (2017). Fansubbing in China. Target. International Journal of Translation Studies, 29(2), 301-318.

Zhang, Y., & Zhang, J. (2018, January). Could Nearby Pokéstops Improve Restaurants' Online Reputation?. In Proceedings of the 51st Hawaii International Conference on System Sciences.

Author bios

Mattia Thibault: Dr. Thibault is a postdoctoral researcher at Tampere University and member of the Gamification Group. He is currently working on the EU-funded project "ReClaim – Urban Gamification for City Reappropriations" (MSCA-IF 793835). In 2017 he earned a PhD in Semiotics and Media at Turin University, where he subsequently worked as a research fellow in 2018. Dr. Thibault has been enrolled in SEMKNOW, the first pan-European doctoral program on semiotics, and has been visiting researcher at Tartu University (Estonia), The Strong Museum of Play (Rochester, NY, US), and Helsinki University (Finland), Amsterdam University of Applied Sciences (Nederland) and Waag (Nederland). His research has been published in reputable venues such as Sign Systems Studies, Lexia and the International Journal for the Semiotics of Law.

Oğuz 'Oz' Buruk: Dr. Oğuz 'Oz' Buruk is an industrial product designer and completed his PhD in Interaction Design at Koç University – Arçelik Research Center for Creative Industries (KUAR). His work focused on creating novel interactive environments for gaming purposes. Specifically, he worked on how to utilize wearables and movement in tabletop role-playing games and utilization of social touch in games instead of using conventional controllers. His research on these topics were published in high quality venues of HCI and Design such as CHI, DIS, Visual Communications and International Journal of Art and Design Education. He joined the Gamification Group in June 2018. He currently supervises the GArMEnt project which is funded by Business Finland. Apart from that he is also a Marie Skłodowska Curie Grant Holder and manages WEARTUAL project in the scope of this grant.

Lobna Hassan: Dr. Hassan is a postdoctoral researcher at the Gamification Group, University of Turku and Tampere University, Finland. Dr. Hassan investigates gamification, motivational technology, virtual reality, and e-participation. She has published in leading journals such as *International Journal of Information Management, User Modeling and User-Adapted Interaction,* and *Simulation & Gaming*.

Juho Hamari: Dr. Juho Hamari is a Professor of Gamification at Faculty of Information Technology and Communication Sciences, Tampere University where he is also the head of the Gamification Group. Dr Hamari's and his Groups' research is focused on the phenomena where games, technology and society meet such as gamification, game-based learning, persuasive technologies, VR, AR, MR, wearables technologies, esports, streaming and virtual economies. Dr. Hamari and his colleagues at GG have authored several seminal works on these topics from several disciplinary perspectives such as information systems, marketing, game research, human-computer interaction and organization studies.