CITIZENS OF THE SMARTER CITY:

ENGAGEMENT IN THE DIGITAL AGE

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Abstract: *With the advent of video games becoming a mainstream form of entertainment, overtaking movies in the amount of money grossed, as well as the amount of time spent playing them, they offer an alternative virtual space for civic engagement. City shapers need new tools that will enable them to be more process-oriented, communicative, and encouraging of the involvement of multiple stakeholders. Digital game models meet these requirements, and although they have slowly been adopted in planning practice, they have not become an indispensable piece of equipment. Their ability to reach and engage millions of users offers an incredibly valuable tool and resource, and arki_lab is making that indispensable.*

Using the technique of gamification allows the bridging of the gap between the citizens and the macro level of urban design strategies. After years of experience with citizen involvement, arki_lab has developed a set of flexible user-involvement strategies called "arki_tools." We use these tools to design cities with people, facilitate our architectural design process, and collate a valuable database from citizens' experiences. Digitalising our tools has led to the CoCityApp, a smartphone application that empowers the community to understand problems and proactively propose transformative solutions to their urban space. The power of arki_tools lies in their ability to gather the local knowledge into real-time data about the conditions of our cities seen through the eyes of the citizens. Further facilitating communal and spatial education is arki_nopoly. Passing the board-game stage, arki_nopoly is developing into an effective tool to facilitate educational projects as well as citizen involvement in projects with both a physical and a virtual outcome.

This process would set a whole new scene for the future development of our urban context; a future where bottom-up and top-down planning, pixels and participants work hand in hand in co-creating the urban landscape.

Keywords: *Co-creation; Digital engagement; Urban design; Citizen participation; City*

Designing Cities With People: Engaging Users in the Process

Questions of who plans our cities, for whom, and according to what 'interests' have never been as complex or as relevant as they are today. The art of changing cities, making places and guiding growth to follow new patterns that better meet our global challenges while also improving liveability represents the constant flux of our field, urban design. To design the urban involves a complex balance of stakeholders, thousands of invested ideas, environmental justice, political will and cultural awareness. This balancing act should make urban design a noisy endeavor due to the cacophony of voices that need to be heard in the design process. At arki_lab, we recognise, listen and include these voices. We believe that creating cities with people is part and parcel of democratic culture and imperative for securing people's right to the city. Stemming from notions of ownership, responsibility and accountability, we know that co-created cities are the most liveable.

It is to this end that we contribute a big share of our time and a large proportion of our attention to the utilization of various tools and methods that activate different stakeholders in each project and trigger their interest to be an active part of the design process. We're confident that the complexity of this process is navigable by all users with some guidance and creative assistance. We have translated the tools we learnt in architecture school and academia into techniques and practices relevant to all levels and all design phases. For the last 4 years, we have developed them into an extensive toolbox along with external consultants from different fields to assist the users in better understanding their local areas, to visualize their design ideas, as well as helping to facilitate negotiations and conversations between the stakeholders. This guidance allows us to extract valuable data from citizens about sites they know best. Furthermore, digitising arki_tools aims to serve the translation of research and experience into a shared digital practice.

To embrace the growing digital market and our users' affiliation with technology, we've been digitising our tools to make them accessible to a broader audience and to share our practice more widely. Digitalising our methods means the transferring of our analogue processes into the realm of pixels and virtuality, a transformation that lead us head-first into the world of gaming. For an office that already 'plays' with urban space, gamifying our tools presented an exciting opportunity for us to revisit the interactions between games, learning, creativity, and social change.

In this paper, we will conceptualise what it means to digitalise co-creative urban design and describe our experience with our digital tools, the CoCityApp and arki_nopoly. By framing our experience within the conversation of game-making and the digital age, we present lessons to the field of education and encourage the engaged thinking needed to solve our current problems of urban sustainability and communal apathy.

Digital Participation in the Age of Digital Citizenship

The kind of education we support is democratic; for everyone, always. Its purpose is to provide people with information, knowledge, and critical conversations that can inform collective decision-making, which is the essence of democratic practice. With over 12 billion devices currently connected to the Internet, and with that number expected to increase to over 20 billion by 2020 (World Economic Forum, 2015), digitalisation can democratically connect this huge potential platform to educational engagement. By making tools for place-making, city-shaping, and improving urban well-being more accessible to the citizens of those places, spaces and cities, one can engage them more efficiently and the importance of civic engagement becomes clear. Digital tools open up the possibility for engagement and connection to happen, however it is not the act of getting connected or the number of connections that creates the value, it is the outcomes those connections make possible.

Inclusion as an outcome is a key property mentioned by researcher James Paul Gee, known for his writings on the relationship between games and learning, who has been particularly systematic in pulling out the best properties that specifically video games have to contribute to learning. One of the properties that Gee attributes is that of "experiential learning with all the right conditions for learning from experience met" (Gee, 2009). Gee explains that games put players in virtual situations where they experience things and that this experience is fundamental to how games "recruit good learning." Old-school learning theory presents the student as a calculating machine that thinks and learns by "manipulating abstract symbols via logic-like rules" (Haas, 2011). Fortunately contrasting, more recent research presents the argument that people do not think through abstract calculation, but rather, through the lens of their experience. It is the memories from these experiences that allows us to run simulations in our minds that prepare us for problem solving in new situations. The flexibility to allow for a scope of experiences in the educational environment is what encourages creativity and fosters independent critical thinking skills. With the

multitude of experiences that can be simulated in the digital realm, virtual gaming presents an unprecedented level of potential educational stimulation.

Using this potential is one of the recent innovative trends in participatory urban planning; gamification, which encourages engagement through adding game-like elements to the otherwise non-gaming environments. arki_nopoly, a board-game-based tool that is structurally inspired by monopoly, is a response to this trend. This tool is designed to aid the users to gain a better understanding of their local area. The main objectives of the game are: learning about basic socio-spatial analysis, problem identification, and idea articulation. arki_nopoly builds on the idea that learning could be increased through gaming as it is more attractive and dynamic compared to the traditional teaching methods. The gaming effect is not only important in the case of children and young people, it is also highly valuable in the case of adult users. This is because adults may not learn in the same way as children, and gaming is a way to introduce various concepts and to increase their awareness about their living environment. Gamification is also a great way to include those who are alienated from the planning and design discourse, as it presents the complex concepts in a simple and comprehensive way. arki_tools utilizes the concept of digital citizenship to benefit the society as a whole, increasing participation in building our cities, and promoting social inclusion.

For arki_lab, two new worlds exist over the top of each other; the digital and the gaming. Having explored the digital with our CoCityApp, we're learning and introducing gamification to our normally analogue tool arki_nopoly.

A Digital Urban Tool
Case Study : our CoCityApp.

The CoCityApp is our first digital tool. After the success of our analogue version of the tool, arki_lab decided to explore a digital version. The analogue version, or arki_collage, is one of our very effective tools that is either used after prototyping or as a stand-alone tool. While it could be used for all age groups, its playfulness makes it most suitable for school-age children. Using colored papers and cut-outs from old magazines, participants can collage their vision for any given space. It is a great tool for the visualization of dreamed spaces. Giving them a clear and almost realistic visualization of their ideas, the collage makes it easier for the students to communicate their ideas and develop them further.

Figure 1: Using collage as a design tool

By simply inserting a cut-out of a prototype or any other installation into an existing environment, and building-up the surrounding with cut-outs we can clearly see how any given space would look like if our projects for the space is realized. The product, is a concrete starting point for discussion about different spaces. Furthermore, it enables the investors of the projects to imagine the final result and makes the communication between the designers/citizens and the investors much easier.

The CoCityApp was designed with the intention of facilitating and expediting the lengthy and often not so effective traditional citizen involvement processes in a digital fashion. CoCityApp gives citizens access to a place where they can share information on how they use their cities as well as ideas on how to improve and develop them; however, CoCityApp does not attempt to replicate the typical community-meeting place down the road. It is an enhanced digital meeting space providing a forum and a guide for citizens to take action online. Designed to be easy to use and accessible to everyone, the combination of our smart-phone application and the website allows for everyone to engage in the transformation of their cities.

CoCityApp is designed as a package, consisting of a website and a smart-phone application. The smart-phone application enables the users to make a collage of their suggestions for the area or to register sensory and preference data using the smileys. The user fills in and registers the relevant data about the project area on the CoCityApp website, then takes a picture of the project area, makes a collage that illustrates his/her vision for that area, and uploads it to the web. This results in a large collection of citizen input, consisting of both collages that illustrate citizens' suggestions and wishes for the project, and a big database about the project area. The power of the CoCityApp lies in its ability to convert the local knowledge into data about the conditions of cities seen through the eyes of the citizens. This data then could raise awareness to areas in need of attention. For example, a student from Nivå, a rural town in Northern Denmark, described her walk to school as boring and old. As a citizen her voice was lost to the wind on the outskirts of big city Copenhagen, but by documenting this street and proposing a vision for the space through CoCityApp, planners became aware and inspired for change.

Figure 2: Using CoCityApp
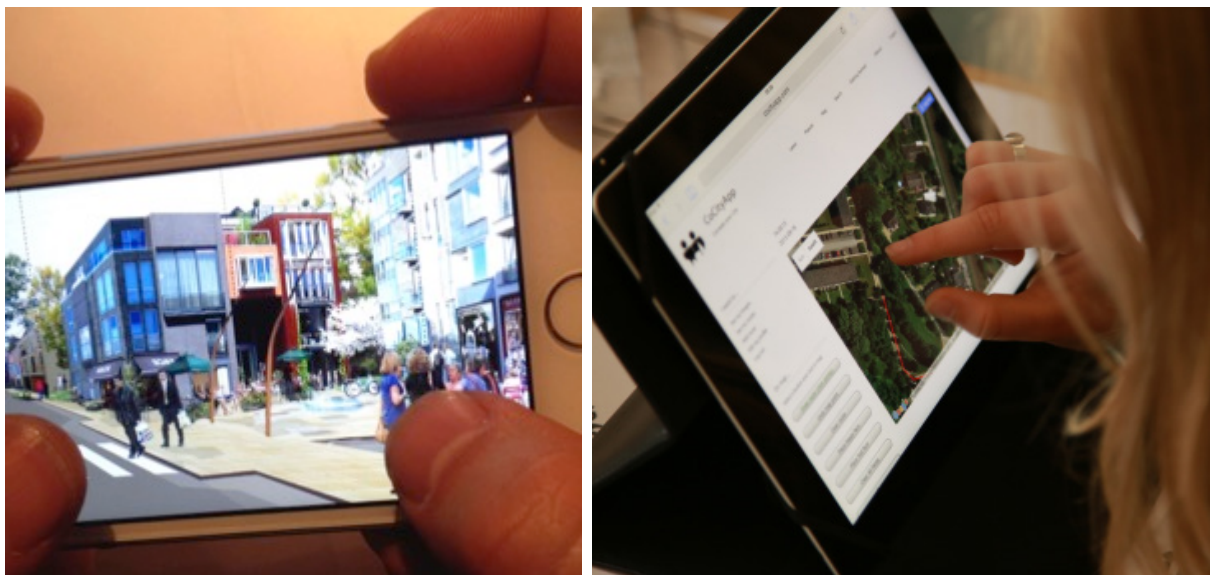
The digitalisation of the analogue collaging tool into the CoCityApp enables its accessibility to all ages and social groups. The design follows the common-sense rules of software design, to make it intuitive for everyone to use and relate to. By working with pixels instead of paper, the CoCityApp platform is highly customizable and can be adapted to various projects and adjusted to different contexts. Adaptability is key in the tool's connection with its users as it allows for and encourages creativity. With the rise of geotagging, each idea can be attached to a location. Data of this sort can be instantly

visualised into heat maps, highlighting areas where there are a lot of ideas, or other distribution analyses. Not only does the instantaneous nature of this data excite us, so does its potential to uncover many new democratic insights emerging from the bottom-up. Using the campaign hashtag, anybody can contribute with an idea that will be added to the cloud of ideas. Hashtags will also enable the categorization of ideas by topic.

Figure 3: Graphics of CoCityApp process, with resulting oh student college

The CoCityApp is a tool for municipalities to collect ideas from the users on how to develop the city, give them value and incorporate ideas in their work with democratic urban development. But even more importantly, it is a platform for open dialogue where citizens can not only share their ideas with each other but promote the democratic design principle that they are the city and the city is theirs to change. The CoCityApp is a tool to shape communities of interest around different urban spaces and to empower citizens and communities. In this way, CoCityApp helps creating a social value that is highly important for a successful and vibrant city. By giving citizens tools and motivation to reflect on their neighborhood, CoCityApp generates knowledge from local communities on what they need and want. The process would set a whole new scene for the future development of our urban context, a future where bottom-up and top-down planning go hand in hand in co-creating the urban landscape.

An Urban Game Tool

Case Study: arki_nopoly

arki_nopoly is a board-game-based citizen involvement tool we first played in 2012 and ever since, it has been continuously used and improved by arki_lab in various projects. Capitalizing on this experience and encouraged by the positive outcome of using this tool, now we're exploring taking this project one step further and developing a digital version of the game. More than the board game structure resembling monopoly, the digital version of the game would consist of two main parts: the analysis and the design. Players would be guided and assisted throughout both phases. Each question or instruction would be accompanied by an educational explanation that clarifies how that particular step is beneficial to the design process. Hence, the game has two main goals: teaching the players how to design and collecting a database of citizens' ideas.

Figure 4: arki_nopoly board-game
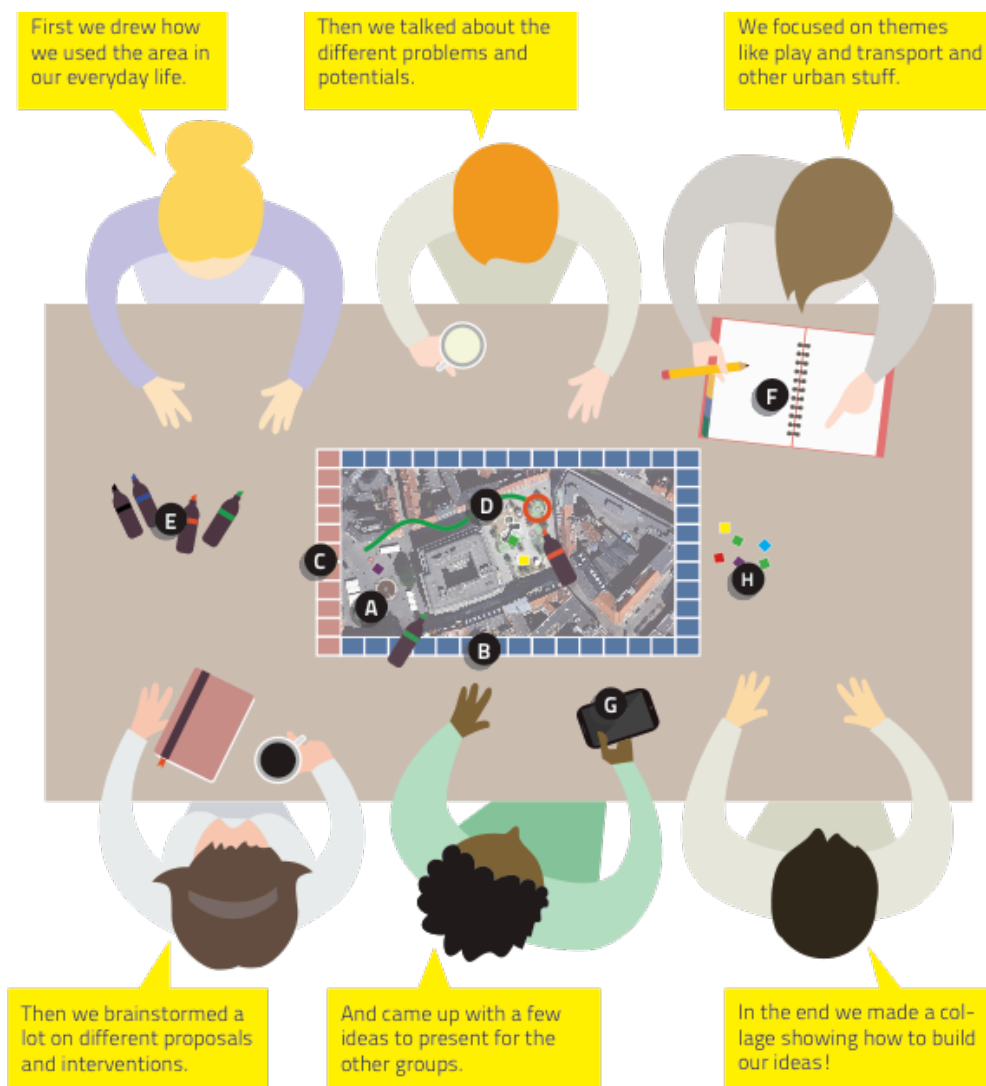
Education is the foundation of the game. Education can equip people to participate in, and take ownership of the community that they are part of. This process, on the long run, helps create more socially sustainable communities where everyone takes part in shaping their leaving environment. To fulfill this goal, the digital arki_nopoly, similar to the analogue one, would be designed in a way to facilitate spatial understanding, problem solving skills and creative thinking for all ages. Our goal is to spread our democratic thinking and design process, hence it is important to make one of our most important design tools available online and to a global market. We believe that the cognitive potential of games have been largely ignored by educators and can be harnessed to revitalise the often anaesthetizing learning environments of today. Rapid contemporary developments in gaming, particularly interactive story-telling and collaborative virtual worlds, could revolutionlise educational media and

Figure 5: playing the analogue arki_nopoly

engagement. As such an influential, popular and widespread medium, digital games are known to elicit powerful emotional reactions in their players. When the play concerns the city, it is important to document the plethora of these emotions and use them as tools in the construction of ideas. It is important to note that we as the game designers have the role of teasing out these emotions by introducing a number of game components, through game rewards, obstacles, various narratives, the sense of competition, as well as facilitating collaboration and interaction.

arki_nopoly will be designed to constructively guide new understandings of urban space and challenge existing spatial emotions. Understanding the dynamics behind these digital design components will come from our analogue experiences and be based on what we know works in real-world situations. The game is normally centered around constructive discussions between the participants and the board, this results in the game being primarily led and paced by the players themselves. The flexibility and power that comes from controlling the game flow, empowers the participants to absorb material at their own rate. This results in more thorough and specialised understandings of the material and appeals to the vast spectrum of learning abilities and creative capacities of the participants. Arki_nopoly as an educational tool seeks to rebel against the traditional, teacher-led education programs, where "students have little control over what they learn, are passive recipients of material chosen by teachers, must conform to the pace and ability level of the group" (Squire, 2003) Instead, arki_nopoly invites its users into the digitally urban realm where fantasy, play and anything goes!

Figure 6: arki_nopoly with expansion

arki_nopoly, besides being an educational tool, is a design tool. Each game ends with digital design proposals for a played urban site all documented and stored in one online location. Having these ideas collected into a database presents a valuable new resource for designers and municipalities. Current civic involvement collected from brief online surveys

or five-minute interactions with passersby on one particular street, results in severely superficial and inadequately informed understandings of space. The arki_nopoly database will represent real views and real understandings of space as seen, felt and expressed by the citizens themselves. Furthermore, the database will be improved upon, as the game will have a competitive element that encourages the audience to play it several times. To foster the evolution and development of the idea bank, the game would need to be attractive to replay to ensure the learning process continues and design proposals are improved.

Digital gaming is on the cutting edge of what is technically possible, whether it is building online communities, creating virtual worlds, or allowing the dynamism of synchronous interaction with online streaming. The benefits for arki_lab exploring the world of digital gaming is more than generating new theoretical understandings of the human experience in relation to technology, or even developing a refreshing guideline for instructional design, but rather, in enhancing a new avenue for creativity and learning to flourish.

Conclusions: From Consumers to Co-Creators.

With the astounding rate of connectivity and digitalisation, pixels have become the metaphorical building blocks of society. Arki_lab seeks to realise this fact by crafting building blocks out of pixels, turning the virtual world into a practical one. City shapers need new tools that will enable them to be more process-oriented, communicative, and encouraging of the involvement of multiple stakeholders. Digital game models meet these requirements, and although they have slowly been adopted in planning practice, they have not become an indispensable piece of equipment. Their ability to reach and engage millions of users offers an incredibly valuable tool and resource, and arki_lab is making that indispensable.

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