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The Importance of Creative Practices in designing More-than Human Cities

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Abstract

Anthropocentric city design practices can lead to the creation of urban environments that serve human needs over the needs of non-human species and the natural environment. This chapter explores the different ways in which cities are creative and more importantly how creative processes, in the form of arts-based methods, may support the design of More-than human cities, ones in which a diversity of species are able to co-exist with humans. Arts-based methods support different ways of imagining non-human concerns, bringing varied viewpoints to the fore and revealing tensions. Arts-based methods can also be used to lower barriers for participation, providing engaging and creative ways to interpret data and information that provides evidence from beyond the lived experiences of those involved in city design. Such approaches are also useful for bringing other marginalized voices to design, such as those of children. Two case studies are described that showcase the use of arts-based method for different aspects of urban design.

Keywords: more-than human cities, visions, creativity, arts-based-methods, participatory design, empathy

Introduction

Urban planning processes have historically been shaped by city visions, such as 'livable', 'sustainable', or 'smart'. Such visions evolve according to changing economic circumstances and political ideologies and are driven and supported by new technologies and innovations. Each new urban concept can be seen as a way for a city to differentiate itself against others within an increasingly competitive global economy. Thus, each iteration of the city is propositioned to counter an old, replacing one emphasis with a new. But are they so different? Does success in one area mean failure in another, or can they support each other? If so, then how do we design such cities that encompass sometimes competing ideals, yet still function coherently? In this chapter four challenges for city design are identified. Next, it is demonstrated how creative practices may be important as a way of *widening participation in design* and for *building empathy and exploring conflicting viewpoints that may exist in trying to balance amongst the goals of different city visions* and especially the *competing interests of humans, non-humans and the environment*.

A brief history of city visions

In the 1970's and 1980's 'creative' and 'livable' cities were both terms that sprung up as a counterpoint to industrial development. The creative city was proposed as a way to foreground arts and cultural concerns in urban planning practices and as such had a very focused aim. By contrast, the livable city was a much broader and somewhat harder to define concept, which Kaal (2011, p.354) described as 'akin to sketching utopia' as they are 'safe and secure, have a decent infrastructure, high level of service provisions and are economically viable and environment-friendly'.

However, as early as 1993, concerns around rapid urbanization combined with the emergence of new technologies led to the framing of digital and smart cities. The initial view of a digital or smart city was one that addressed these challenges via a highly-instrumented, interconnected and data-driven 'real-time' infrastructure (Hall et al., 2000). By 2012, the smart city terminology was overtaking the digital city, especially after the European Union began to label sustainability projects in the urban space as "smart" (Cocchia, 2014). According to an analysis by Cocchia (2014), the main difference between the terms is that digital city concerns the use of ICT in urban areas and smart city also concerns environmental quality and the quality of life. Chourabi (2012) summarizes the definition as a "sustainable and livable city." Thus, in this view, the smart city concept both subsumes and somewhat concretizes the livable city vision.

In a parallel review to Cocchia, Nam and Pardo (2011) characterize smart cities along three axes: technology (digital, intelligent, virtual), people (creative, humane, learning), and institutional (community, growth). While Nam and Pardo's definition lacks the environmental angle, the conceptualization by Gil-Garcia et al. (2015) adds in environmental (sustainability, functionality) and governance (empowerment, collaboration, e-governance) to the definition. In a similar vein, Green (2019) argued that in smart cities, we "recognize that technology will have little impact unless it is thoughtfully embedded into municipal structures and practices."

Since mid-00's, the research and definitions from smart cities first turned from technology-centric to anthropocentric, where "according to which cities should respond to people's needs through sustainable solutions for social and economic aspects" (Albino et al., 2015, p. 4). Albino et al. trace this line of research and observe that as the smart city research progresses, there are multiple lines of research that propose that instead of being governed, smart citizens should be empowered to adapt those technologies to their needs (Cardullo and Kitchin, 2019, 2019; Foth, 2018; Fredericks et al., 2019, 2016; Kitchin, 2013).

The other concurrent turn was from empowered to sustainable, with Höjer and Wangel (2015) making the case that cities need to adapt for sustainable development, in order to address the global environmental and social problems. They propose a definition for smart sustainable cities where *the city meets the needs of its present inhabitants* (people dimension), *without compromising needs of future generations or exceeding environmental limits* (environment dimension), with the support of ICT (smart dimension). This line of research is still ongoing, with a literature review by Bibri and Korgstie (2017) pointing out that while the field has multiple opportunities, further development is needed in prescriptive knowledge where smart solutions can have substantial contributions in relation to sustainability and supporting theoretical background.

But even smart and sustainable city agendas may exclude other important priorities. To counter this, there exists some niche visions, such as Bristol in the UK which launched a playable city initiative (<https://www.playablecity.com/cities/bristol/>) that utilises technology in pursuit of the goal

of making cities more interactive, playful and fun. Examples from Bristol include *Shadowing*, an installation on street lights that enables them to record and playback shadows of passers by. Also, an augmented reality experience called *Empath* that allows a person to embody another person and ‘hear’ their internal thoughts, these thoughts being triggered by actions taken in the real world. The playable city approach has since been replicated in other cities around the world. The hackable city (De Lange et al., 2019) started as a project in North Amsterdam, the Netherlands and like the Playable City concept has since been replicated elsewhere. It conceives a city that is amenable to rapid and often short term modification based on immediate needs of citizens and is founded upon principles of collaborative city-making and co-creation.

Looking to the future, a recent critical review by Yigitcanlar et al. (2019) makes a case that a city needs to be sustainable first, in order to be considered truly smart. They review recent literature and advocate a post-anthropocentric view in order to address multiple disasters caused by the Anthropocene and urban development, including environmental pollution, loss of biodiversity, and socioeconomic inequities. In accordance, eco-centric, deep ecology (Næss, 1997; Carson, 1963) “identified anthropocentrism as a root cause of the ecological crisis, human overpopulation, and the extinctions of many non-human species”. Planet-centric and nature-centric are based on similar ideals, that are the opposite of the human-centric, or technocentric approach. Taking all of this into account, Yigitcanlar et al. (2019) point out three major weaknesses (techno-centricity, practice complexity and ad-hoc conceptualizations) and present a future research agenda for more-than-human cities of tomorrow. These different city visions are summarized in Table 1.

Table 1. Development of city visions and their associated principles

Vision	Concept	Evolving view of stakeholders and their involvement in urban transformation
Creative	Attractive to creative people and industries	Rarely involve citizens in design (Yang & Peng, 2013)
Livable	Safe, secure, prosperous and sustainable	Urban indicators are used to quantify livability from multiple perspectives that reflect on inhabitant’s quality of life. City planners redesign based on quantified findings.
Digital, real-time city	Highly -instrumented, interconnected and data-driven.	ICT and city architects

Smart city, 2010s	Smart and livable city through technology, people and institutions.	Technology designers, people, institutions.
Smart city, mid-2010s	Enriching the previous definition with empowering through better governance and considering environmental sustainability.	Empowered, active people and including environment as a stakeholder
Smart, sustainable cities	Meeting the needs of current inhabitants without endangering future generations or the environment with ICT.	Including environment and future inhabitants as key stakeholders
Hackable	Adaptable for rapid and short term change	Driven by local knowledge and grassroots initiatives
Playable	Interactive and fun	Designed by technologists to provide playful experiences for city inhabitants
More-than human	An entanglement of animal and plant species, technology and built environment	Inclusive also to the needs of non-human inhabitants and the environment

Challenge 1: cities must meet not only the needs of current inhabitants, but of those who will live there in the future.

Challenge 2: anthropocentric development has a detrimental effect on nature. More-than human city visions are needed to counteract this.

Resolving tensions through Participatory Processes

All of the above goes to show that precise definitions of city visions are hard to come by and categorizing cities is highly dependent on which particular stance is chosen. In fact, *city framings may change but the basic daily needs of the people stay the same*. Cities are places where people live, work, sleep, take part in hobbies, socialize, fall in love. With each new framing, much of this essentially remains the same but the ways of conceptualizing and talking about the city start to

change and new possibilities emerge. But even such incremental adaptations can lead to tensions between old ways of living and these new approaches that are needed to improve sustainability and account for rapid growth of population and the strain this places on existing services. Therefore, perhaps of more importance than the city vision and framing itself are the *design processes* that help to realize such visions and the ways in which they can be used to reveal conflicts and achieve workable solutions according to differing and sometimes competing needs.

Over time, there have been changes in how cities approach urban design and also in who gets to participate in that process. At first, highly technocratic and top-down approaches were popular. Such approaches can offer possibilities to participate in government processes, but in many cases offer only a form of pseudo-participation where people feel like they are participating but their capability to effect change is limited. For example, voicing an opinion to help choose between different options but not deciding what those options should be. Models of participation have first been explored by Arnstein (1969) who used a ladder metaphor to describe different stages of participation and to demonstrate how some forms of participation amounted to little more than tokenism within which citizens had no real power. Later researchers have taken and adapted this idea to reflect that people have differing goals and motivations to participate and that so-called 'lower' forms of participation are in some cases the end-goal (Tritter & McCallum, 2006). In general, though, purely top-down approaches are rarely appropriately sensitive to the needs of local people and in worst cases can be destructive to existing social and economic structures (Sennett, Burdett & Sassen, 2018).

To overcome the existing and future challenges of urban environments, it is crucial to engage citizens in design processes. By doing so, the aim of democratic decision making is emphasized in addition to citizen's actual engagement in potential future changes in their urban environments. Thus, the traditional top-down approaches were contrasted with bottom-up solutions that placed citizens as key innovators, who understand and can communicate more clearly the problems that exist in their local neighborhoods (see Cardullo et al., 2019). However, true grass-roots approaches may lack the capacity to scale or achieve more than hyper-localized impact.

Expanding on these, a more balanced 'middle out' approach was proposed (Fredericks et al., 2016) that takes place via situated participatory processes and utilizes knowledge and resources from both the top (government) and general public (bottom). Such approaches still recognize the value of empowering citizens via participation in design processes, yet supported via governance and infrastructures that provide a level of oversight and control. This has the effect to both facilitate solutions to take effect whilst preventing local solutions from causing unintentional harm elsewhere.

If people are to take part in city design then there needs to be appropriate mechanisms through which such participation can occur. A variety of design approaches have been proposed to support the participation and empowerment of citizens within urban planning processes. In particular, participatory design (Bødker and Kyng., 2018; Sanders et al. 2010; Castelnovo, 2016), co-design, collaborative design, and civic design have been investigated intensively, particularly during the past few years. These collaborative design approaches are also applied in urban planning, and participatory urban planning comprises urban planning processes with citizen participation.

While participatory approaches are generally considered to be important in urban design, they are not without difficulties. Participatory design approaches have been criticized as being project-based, time- and cost-intensive, and having challenges regarding the involvement of actors or the level of ambition (van der Helm, 2007). One particular issue is that to fully participate, everyone

needs to develop a shared understanding of the challenges and possible solutions. To overcome this, a number of design methods and analogue and digital toolkits also exist to be used within collaborative urban planning processes. These include community mapping, card sets and gamified approaches (Gilman, 2019). One aim of such tools is to provide structure around certain required steps in the planning process in a way that helps those who have less prior knowledge of planning processes to participate. For example, asking people to collect data onto a map has two benefits. First, the map itself provides a visual cue to the context of the task and is something local people can easily relate to their own lives. Second, the collaborative nature means that participants can support each other or wait for more confident participants to 'go first'. Similarly, card sets and games work to limit the types of interactions and focus a task. However, in smart city contexts the complexity of city design is such that it now includes ever-changing new technologies and complex data flows. Such technology and data can play two different roles. First, it can be used as a tool for identifying problems to solve – for example, sensors can identify areas of high air pollution. Next, it can itself be incorporated to a solution. This causes additional barriers for participation, along with a requirement for new tools and approaches to overcome them.

Challenge 3: in order to design effectively in smart contexts, people must be supported to develop shared understanding around IoT technologies and complex datasets.

New methods for More-than human cities

While the tensions and solutions discussed in the previous section focused on the needs of humans, we revisit the thoughts of Yigitcanlar et al. (2019) and point to the need to think *beyond* the human towards more-than-human cities. This city vision foregrounds the concerns of the environment and the non-humans who inhabit it, thus moving the focus from *smart* to *smart and sustainable* environments, including notions of social and environmental sustainability. As indicated by the recent research on urban development, smart city development and the effects of climate change and land planning, more radical design approaches are needed to make an impact that will change the pace of the critical factors in urban environments. Because the current design approaches tend to be human-centric and not sufficiently consider the rest of the natural and non-human environment, this can lead to apathy toward environmental concerns and a lack of consideration of such throughout the planning process. Environmental issues are often 'invisible', especially within urban areas.

Therefore, some recent studies (Heitlinger et al., 2018; Clarke et al., 2019) have argued that, in general, design approaches should be taken one step further in order to support the more-than human research agenda and city vision. This calls for not only more civic-led approaches but approaches that are inclusive to the environment and its non-human inhabitants. But whilst the history of citizen participation is now quite long and there exist many approaches to support participation, there has been less emphasis on creating new design practices that take such a more-than human perspective, or post-anthropocentric view, during urban design. Further, as pointed out by Höjer and Wangel (2015), if designers are to take also the needs of future city inhabitants into account then it is necessary to find some way to give them a voice during the design process.

Challenge 4: collaborative and participatory design approaches cannot resolve the challenges that rapid global changes accelerate if the assumptions and, by default, the processes are techno-centric or human-centric. However, in the end, design practices are still undertaken by humans.

Therefore, we need new design practices that facilitate the foregrounding of other concerns beyond the lived experience, without sidelining individual and local concerns.

Creativity, Creative Practice and Arts-based Methods

The above sections have highlighted four distinct challenges for urban design. These can be summarized in the following way:

City visions and design practices need to be extended to take into account both those whose voices can and cannot be heard. This includes the voices of both current and future human and non-human human and non-human future city inhabitants and both the natural and built environment they inhabit. To achieve this, participatory approaches are needed where diverse city stakeholders engage with available information to elucidate needs and conflicts of needs and identify and agree upon possible solutions. Data and new technologies may play a role in identifying and making visible some of these concerns, but everyone in the process needs to be able to engage with and understand them.

All of this points to the need for new design methods to support exploration of a much wider diversity of perspectives than ever before. But as yet, there are few concrete solutions regarding how to design for more-than human perspectives or to give voice to those not able to speak out for themselves and their needs. Throughout the remainder of this chapter it is demonstrated how creativity and creative practices, in the form of arts-based methods, are one solution for addressing such issues.

The first focus is on creativity and an exploration of how it manifests within existing city visions. Subsequently, the focus is on the creative practices that support city design and in particular the use of arts-based methods.

Creativity in City Visions

Creativity can be characterized by 4 P's (Rhodes, 1961). The creative *person*, through a creative *process* utilizes skills and abilities to create a *product*. The creativity of the product may be assessed according to criteria, such as originality, utility, surprise and to a smaller extent, aesthetics (Acar et al., 2017). The *press/place* in which the person operates makes it easier or harder for them to be creative. Creativity was central to the premise of the creative city. The creative *place* was seen as important in attracting and supporting the working of cultural industries and the creative class (*creative people*). Hackable Cities also uses the idea of the city as a *creative place* that fosters innovations through the *creative processes* of individuals. Examples of city hacks include modifying a bike rack to double as a seat, or finding an unused enclosed cabinet in a park to use as a book-swapping space, both of which have the creative elements of originality, utility and surprise. The Playable city is itself a creative *product*, creating novel experiences for city inhabitants when the city behaves in unexpected ways. The creative *process* of creative placemaking that emphasizes the importance of arts and culture is also seen as integral to the building of Resilient Cities (Rapson, 2013; Yue, 2020).

All of these examples serve to demonstrate the multitude of ways in which creativity is woven into the very fabric of cities and their realization. Architects and urban planners have used creativity to form city visions with several design approaches, as demonstrated in the two following examples.

Creativity process and product by Imitating Nature: The work of Italian architect and urban planner, Marcus Vitruvius Pollio (c. 80 BC–c. 15 BC), can serve as an example of an urban creativity process and product that incorporates and reflects the natural world. He not only designed buildings but also planned towns, aiming to provide health environments for humans to live. He followed principles of *stability*, *utility* and *beauty* and took inspiration from natural design, such as the human body, noting that it was based on universal laws of proportion and symmetry and argued for incorporating these also into architecture. Combining nature with urban design, he proposed principles for urban planning that included first carefully choosing a healthy site away from too much mist, frost, or sun. He proposed how to trace wind direction and design with this in mind, aligning street networks accordingly. He argued that the most habitable environments could be identified by observing nature, including birds, fish and mammals. Similar ideals can also be found in the practice of nature-based/nature-inspired design.

Creativity process and product based on standards and universal technical language: Le Corbusier (Charles-Édouard Jeanneret, 1887–1965) was a Swiss-French architect who wanted to improve the living conditions for inhabitants of crowded, industrialized cities. He favored the building of tower blocks and high rise buildings, incorporating green spaces in a type of 'vertical garden city', and favoring the separation of workplace, residence, shopping centers, entertainment and government venues. This was a reworking of the ideas of Ebenezer Howard (1850 - 1928) who originated the Garden City concept that advocated self-contained communities surrounded by and closely connected to green spaces. Le Corbusier aimed to base his designs on human needs and scientific knowledge, but excluded citizens from involvement in planning processes. He advocated to standardize much of the planning and building process, favoring prefabricated solutions and use of machinery and factories for production processes. He argued to create international conventions to standardize measurements for domestic equipment and to teach it throughout the world. Thus, Le Corbusier's creative vision was one of standardization, which while constraining the opportunities for novel design, would make the city a more coherent and understandable place to live. Narrowing the design space also lowers the barriers for participation by reducing complexity and knowledge needed to engage.

Creative Practice in City Design

Creativity manifests in city visions in a variety of ways, but how can creative practice be utilized in participatory approaches to urban design? In this section, the focus is on the use of arts-based methods to support participatory design processes and the reasons for doing so. This section will demonstrate how arts-based approaches are useful for addressing many of the challenges highlighted previously in this chapter, as they can be used for finding and solving conflicts, building empathy and overcoming barriers to participation.

Traditional participation is often seen as cognitive and individual based on answering predetermined questions as subjects, whereas participation in the context of arts-based and creative processes are often *collective* and based on the relational aspect of human encounter that allows for multiple perspectives to emerge. It is primarily focused on identifying helpful questions and it values the imagination, rather than simple answers relying purely on the rational. Because this is a collective action it does not mean that people agree in comfortable consensus - often there is disagreement - but the use of arts-based and creative methods allows people to hear each other in dialogue rather than repeat their own monologues. This is where the political steps on to the stage in the creative action taken, critical creativity is about diverse voices being spoken and heard in a particular context which can create a feeling of belonging. This approach is defined in local contexts shaped by local understandings and not readily transferable or scalable. (Adams and Owens, 2016, p. 19-21).

Arts-based methods are also often used for their effectiveness in building empathy, for example towards marginalized groups, such as refugees (O'Brien & Donelan, 2007; Day, 2002; Oliver et al., 2012) or within environmental education (Bertling, 2015). Curtis (2009) describes 'chains of inspiration' where people who worked directly on environmental protection were shown to have been inspired by art that engendered within them an affinity towards the environment. This art was made by artists who had in turn been inspired by the environment: 'by providing an emotional affinity or empathy for the natural environment, art can have a major role in influencing pro-environmental attitudes'.

Arts-based methods have offered a space of exploring social, emotional, and political processes of ways of organizing and practicing, as well as questioning professional assumptions (Pässilä, Owens & Pulkki, 2016) and this might be useful also human-centered design. Arts-based methods offer a possible frame and space for the eco-social approach (Salonen & Konkka, 2015) on transformational learning (Lehtonen et al. 2018) where the focus is on how to organize a process of sustainable design. The eco-social approach to education is originally defined by Salonen (2014) as a symmetric human–nature relationship as asymmetric where humans are fully dependent on nature but nature can flourish without humans. The eco-social approach is especially relevant when it is necessary to find solutions for systematically intertwined environmental, social and economical challenges. These type of challenges are named as “wicked problems” because the root cause of them are linked to various diverse parts which are independent of each other. In order to be ready for problem solving in this context it is necessary to involve multi-voiced and multilayer participation (simultaneously provide space for both bottom-up & top-down co-creation). Lehtonen et al (2018) highlights that we need to focus on understanding the complex processes of change rather than rush to implement various problem-solving strategies to a challenge like climate change. Challenge itself is formed through human actions and behavior. Even identifying where to start to make sense of possible solutions requires multidisciplinary knowledge production as well as broad awareness of emotional, political and economical tensions. As often repeated, these problems which are causes of our existing knowledge and understanding demand not yet existing knowledge. In this sense also effective environmental education and education for sustainable development needs to be re-thought through lenses of transformational learning as well as stepping out of the idea of modernism. Lehtonen et al. (2018) are challenging the unsustainable thinking in dichotomies and a dualistic worldview and a need of raising awareness of interconnectedness in the context of sustainable challenges. They are providing an example of how to explore it within the context of climate change education *Climate.now online course* (<http://www.climatenow.fi/>) for higher education. It is a case example where different stakeholders from university and beyond as a multidisciplinary group of experts design in a transdisciplinary collaboration within natural, environmental, technical and educational scientists and artists a new type of learning space that is open to everyone and contains perspectives from many different fields. They suggest special, integrative pedagogical approach that includes arts-based learning as fundamental. According to them, arts in education enables critical reflection on a personal and cultural level as well as helping to become aware of attitudes, norms and taboos (Lehtonen et al. 2018).

In summary, arts-based methods have been shown to be effective to achieve a wide range of effects, such as to *foreground conflicts, support intuitive and creative thinking, invite multiple perspectives, foster new ideas, achieve consensus and engage with problems through multiple senses.*

Arts-based methods in practice

This section provides background information and practical advice on using arts-based methods for public participation.

The focus of using arts-based methods is to allow individual perspectives to emerge and be critically examined. Reflection is a skill that can be learned, and especially critical reflection is fundamental as people often seek evidence that supports our own ideas and assumptions, ignoring evidence to the contrary. It is easy to find evidence to support any point of view, even if the evidence is flawed. With the help of arts-based methods basic assumptions (which are often normalized to be the right perspective) can be explored and made visible as well as made accessible and engaging to the public.

From the very beginning humans have been drawn to expression, pleasure, belonging and spiritual being. It is only possible to imagine the reason for humans leaving their own hand prints and drawings 15000 or even 25000 years ago in the Lascaux cave's where there can be found nearly 6000 figures. At that time, man did not perceive an animal figure drawn on a rock as a form of art. In the past, artisans have been responsible for producing art and their work has been valued for their skill and identified as a craft and part of culture. Yet, these days art is generally more broadly defined as acts of creation and ways of expression, including for example dance, music, literature, theater, film, sculpture and paintings. It manifests in various ways in different cultures and times (Fleming, and Honour, 2009). In such a view, anyone is an artist when they are in such acts of creation. The nature of art as aesthetic experience has been developed by Shusterman (2008 and 2012), who questioned taken-for-granted assumptions between higher and popular art; and emphasized art as an embodied source of thought and engagement. For example, he identified rap music as both urban art and political agency (Shusterman, 2008).

Interest in arts-based approaches and various forms of arts-based methods in business and management education (Taylor and Ladkin, 2009) as well as "education in, through and for communities" (Coemans & Hannes, 2017) has continued to grow in the 25 years since Eisner published his seminal work (1993) exploring the possibilities of bridging research in arts and science. Arts-based approaches can be seen "**as a wide spectrum of practice**" (Owens, 2019, p.8) **where on one end of the spectrum there is an instrumental use of art and on the other end of the spectrum is having absolute value without any need to serve or benefit anything other than itself.**

Arts-based methods are, as a concept itself, methods that are based on a specific form of art. For example, methods based on theater and drama are often designed with the help of basic elements of dramaturgical framing, including *role*, *situation*, *focus/perspective* and *tension*. Arts-based methods are classified as follows:

- **Visual art.** *Still images:* photography, drawing, collage, painting, graffiti. *Moving images,* video, digital animation. *3D artefacts:* e.g. quilts, mosaics, masks, life-size marionettes.
- **Performing art.** Theatre/drama, dance, music, puppetry.
- **Live art.** Writing on the body.
- **Literary art.** Poetry, creative writing, reader's theatre
- **Multiple methods approach.** Combining different art genres (Coemans & Hannes, 2017).

Arts-based methods can be used to support a participatory process in a context of co-design and co-creation with the purpose to build sustainable societies. In this context, all involved are active citizens and have an agency in their community, whether they are conscious about it or not.

Empowering youth to express their lived experience

The following presents an art-based example based around five fictional characters, but based on a real research setting. The first is **Ava**, who is a facilitator working with communities applying arts-based methods to participatory design. The second is **Milo**, an artist working within communities and organizations applying his artistic skills in the context of social justice, collective voicing and ICT. The third is **Sophia**, a voluntary member of a community center who is interested in democratizing the ownership of data to citizens. The fourth and fifth are **Ilona** and **Noah**, a six year old girl and boy who are taking part in a participatory process.

Ava, Sophia and Milo are working in their local community on a project aimed at understanding the lived experiences of children and young people living in a suburb. They want to answer the following question: How do children and young people experience social life, healthcare and youth service in this district? What are the burning issues that worry them and what dreams do they have for new services designed around their interests and needs? They work with a group of children on activities designed to reveal these burning issues.

Next, Ava, Sophia, Milo and a group of young pupils from the same school sit together to imitate and illustrate, visualize, and dramatize service situations and care practices 'as is', in other words how they have already been experienced. One of these children is Noah, who explores several times in a playful way a situation they have faced, slowly each time moving towards thinking about what causes confusion in such a situation. In this scenario, arts-based methods are being used as a *communicative tool*. Rather than asking Noah, *what were your thoughts?* in that confusing care situation instead it is framed in such a way: *Noah, what do you think this role character in this perplexed situation is thinking?* Such distancing helps Noah to express thoughts more freely. It is also possible to use the same techniques to investigate the same confusing or perplexed situation from different points of view, for example as it might be interpreted by a guardian, parent, civic officer or any other person who is involved in that situation.

Arts-based methods can be used to explore such issues further. In the following example, visual props are used to organize a space for dialogical ideation. These specific images (figure 1) are called *theatrical images* and Ava has been using them for inquiring about people's emotions, tensions, hopes and needs.



Figure 1. Visual props in the form of theatrical images for use in participatory design. Photos are taken by photographer Maiju Saari, artistic design by Anne Pässilä, graphic design Laura Mellanen, actors Mari Kanerva Niemi, Minna Partanen and Heikki Hagman.

Ava: Arts link the imagination and emotions into practices, and that would let us start to create scenarios, which could be described as 'as if' situations. 'As if' is linked to imaginative thinking and it allows us to sense how young people would like the health , social and youth care services to be felt like.

Milo: Isn't it about empathy?

Ava: It can be that too. Theater director Augusto Boal 's life work in a theater of oppressed was fundamentally based on building social justice and empathy (in a context of morality and ethics when it is sitting next to criticality) in society. Also psychiatrist, psychosociologist, and educator Jacob Leavy Moreno's life work has psychosociolistic approach to empathy building as well as various forms of art therapy. For example drama therapist Carl Rogers and Sue Jennings had a significant influence in the field of drama education when working in their own humanistic way in the field of empathy using gestalt in transforming and gaining new awareness.

Sophia: Empathy is one core function of inquiry where you focus on appreciation. I feel that it is an access to polyphony. I recall how we used visual and storytelling methods in the first stage of planning where we were mapping the emotional landscapes of children's neighborhoods. We used two fictional characters as a pretext for storytelling when asking children to create a loving friend (a character) to Samantha Jänis (figure 2) and WOW-GRETA-WOW (figure 3).



Figure 2. Samantha Jänis is friendly, super curious about science, can not always remember is 2+2 a carrot or something else.



Figure 3. WOW-GRETA-WOW has lot of super powers and loves nature, forest and butterflies, especially golden butterflies. Samantha Jänis and WOW-Greta-WOW are examples of visual and fictional characters which can be used during artful inquiry, sketches done by Anne Pässilä, photos Antti Knutas.

Milo: Yes, do you remember Ilona, one of the participants? She drew so intensively and by drawing a story she told what kind of person is a loving friend and what kind of place is safe and what makes the spaces safe (figure 4).

Milo, Ava and Sophia used Ilona's drawing as an artefact to talk about Ilona's emotions related to their neighborhood.



Figure 4. Ilona's drawing was about a safe place where she would take Samantha Jänis (where Samantha would feel good and inspired).

The pretext of sharing experiences started with safe places. With the help of fictional characters the facilitators could also talk with Ilona about what places she found unsafe. These inquiries were made using aesthetic distancing: “Ilona would you tell us which places Samantha Jänis does not want to go. Draw these places that Samantha Jänis finds unsafe” Then Ilona started to tell where and why Samantha Jänis is afraid. She said that adults behind the local corner shop (R Kioski) were often behaving oddly, they were very loud and would move unpredictably, she also explained that she drew them behind the corner shop because she would then not be there, she also said that there are no worries because she is always with her granny or mother over there, and granny is powerful, no one dares to behave badly when she is around. Sophia, the facilitator, knew that often some adults gathered around there to drink beer and socialize because they did not have money to go to the nearby pub.

All these conversations with children were audio recorded and through them Sophia, Milo and Ava designed an emotional map of the area. Such a map can be used in the next stage of planning with city officers interested in citizens – specifically children - lived experiences about safety.

In this example, the arts-based methods are used to provide a voice to those typically excluded from the design process, namely children. The normal methods for support public participation are not generally appropriate for children and youth.

Designing Future personas as Voice for the Voiceless

While children can be directly given a voice to planning processes via the use of carefully selected and age appropriate methods, it is not so straightforward to give a voice to nature. In an effort to fill the gap in methods for empathy building for more-than human perspectives Clarke et al. (2019) developed an arts-based approach in the form of embodied drama to enact an urban walk to support understanding of relationships between different urban species. This approach requires that participants use their imagination to put themselves into the role of non-human actors. In a similar vein, Steele et al. (2019) identify two concepts of 'the stray' and 'the friend' as ways of developing empathy, through arts-based methods such as diagramming and sketching, for understanding the complex relationships between humans and non-humans in the city. Again, this approach is based on imagination and in urban environments. Yet, many environmental and natural concerns are completely hidden from view and therefore may be hard to envisage through these approaches.

Science offers a wide array of methods for understanding the needs and problems faced by the natural world. Technology is increasingly used to support the scientific method, to track and capture aspects of the environment that are hidden from humans. For example, sensors can track water and air quality. Cameras, sound recorders and tracking devices can covertly and more easily capture evidence of animal and insect activity. But translating this into design scenarios is not so straightforward, especially where it requires interpreting different sources of evidence in the form of data and other related information. Therefore, there is a growing need for new methods designed for building empathy *via data and other forms of information*, in a way that can help to bring more-than human design methods, such as those described above, to life.

In the following scenario, **Ava**, **Milo** and **Sophia** are working with a theatre pedagogy group. In the past, some adult students in this group have worked within a pedagogical framework exploring the future by designing CyberPunk characters, and developing sketches, props, photographs and videos to support their future visions. CyberPunk characters were brought to life using the imagination. But now **Milo** asks '*What if these characters were brought to life using real data sets.*

How would this change the way we think about the future, if we can identify positive, or worrying trends? Could we imagine personas of the future, who can speak for those without a voice - the animals, the insects, the trees, the air, or even the future generations? What would it be like if we created these characters and then used them as provocations in urban design?’

Ava, Milo and Sophia recruit a group of students who are interested to expand the CyberPunk idea and create SciberPunks. These are future beings, who can channel the voices of those unheard and who use augmentations as ‘special abilities’ for listening to and communicating data to reveal hidden things. For example, they may be able to hear, smell or taste data as a ‘seventh sense’ and communicate not just what the data says but how it *feels*.

Ava asks ‘*but what about these students, they are not so confident in using different types of data set*’. Miro replies ‘*No problem, we can create narratives and games to make this easier*’.

Beth is one of the students taking part in this new initiative. She starts reading a story, it is about a Raven and two characters called Shadow and Light fighting. They are fighting about the future and what it will be. Raven wants them to help Shadow and Light by exploring different types of environmental evidence that show how the future may end up. They are exploring a local nature area, how it has changed over the years and what types of animals and habitat there is there now.

Beth is asked to imagine a character that was living in that area thousands of years ago, when the area was just swamp and no people went there. She uses many different methods, such as creating a *manifesto* from art materials she has to hand, creating soundtrack artworks to imagine the sensations and sounds of being in the nature area. She sketches her character on paper, and gives it a name *Swamp Fairy* (figure 5) and then uses several techniques, such as *role play with others* to imagine the personality. She imagines the *hidden thoughts* that her character does not dare to speak aloud. They are fears for the future, based on what she has read. This technique is an application of one drama convention introduced in Owens and Barber (2001) Mapping Drama.



Figure 5. Swamp Fairy is a character created as a first step in designing a SciberPunk

Beth’s character jumps forward into the present day. There is a virus that is causing problems across the world and everyone is staying inside. It is early days and no-one knows how the situation will develop or how bad things will be in 1 month, 1 year, 10 years. The three characters, Raven, Shadow and Light are again arguing over what the data means and how things will progress. *Swamp Fairy* jumps into help, by playing games with data cards (figure 6) that are designed to prompt thinking about trends in data, and trying to make sense of all this information that appears daily in the online news.

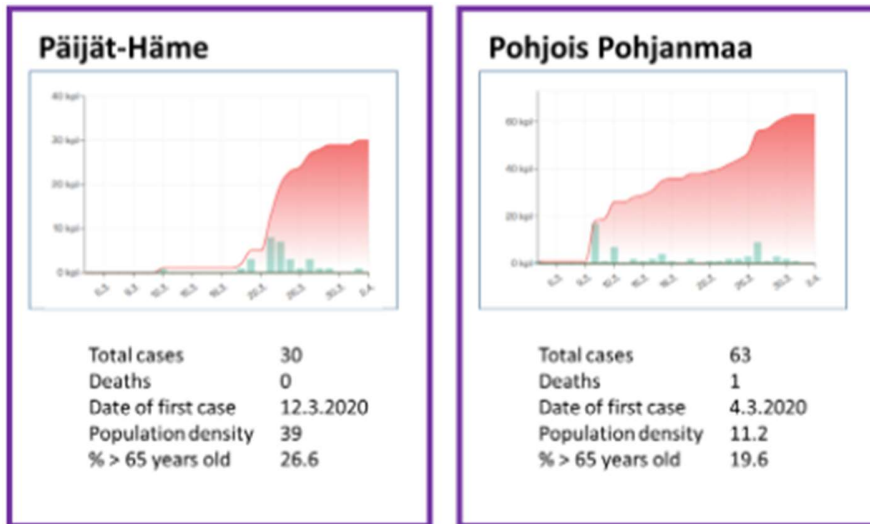


Figure 6. COVID-19 data is curated into cards that make comparing local regional variations much easier. Card games include removing values and asking people to guess the missing figures.

Beth is next catapulted into this future, where it is common that people are adapted with special abilities that allow them to see, hear, taste, smell, hear, or directly sense data through a seventh sense. How would *Swamp Fairy* evolve, with what abilities? How would it feel to channel data and how could this sensation be communicated to others who didn't have the sense? **Beth** decides that *Swamp Fairy* has a crown to listen to what nature is whispering. Another character, *Power Granny* has a sensor in the shape of a butterfly which can sense other people's emotions and flashes red when there is a lot of negative feelings and golden when the feelings are positive (figure 7).



Figure 7. Swamp Fairy evolved to a SciberPunk alongside Power Granny with a butterfly sensor

The SciberPunk characters are not typical of other types of persona used in design scenarios. They demonstrate more connections to nature and to each other. They extend CyberPunk characters as they are imagined via real datasets and the arts-based approaches show promise

to be used in conjunction with the other ideas outlined above, that of embodied urban walks (Clarke et al., 2019) and ‘stray’ and ‘friend’ approach of Steele et al. (2019).

The overall approach to supporting more-than human city design through creation of SciberPunk characters as future personas, supported by nature-based data and other information, can be seen in figure 8.

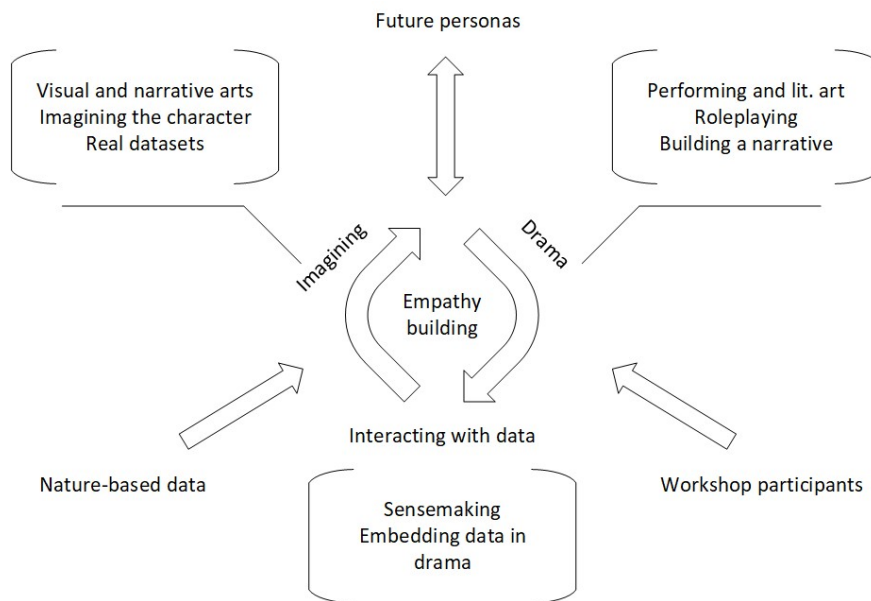


Figure 8. The process of using arts-based methods to create future personas

Conclusions

Radical changes are needed in the way we think, plan, and design our living environments, particularly in urban areas due to the density of people living in these areas. Neither the human-centric nor the techno-centric design approach has proven to be sufficient to tackle unwanted urban development. Also, if design premises are based on incorrect conclusions, by engaging citizens with collaborative design approaches, then only the secondary challenges of urban environments are responded to, not the most urgent and critical ones. This especially includes typically hidden concerns of non-human species and the environment and emerging problems that may be felt by future generations, as well as changing daily practices of people afforded by new inventions.

The four challenges described within this chapter highlight the need for city designers to think beyond the immediate human needs and to design also for the needs of nature and the non-human species that inhabit cities, as well as all future inhabitants of the city. Current anthropocentric design practices are generally focused on current human needs and new methods need to be created and *consciously* adopted that bring diverse voices into design processes and/or advocate for those that are not present and whose problems cannot be easily seen. Data, especially nature-based data, combined with other sources of information is one key route through which hidden problems can be revealed and made more tangible and open for discussion. However, all participants must know how to engage with such data.

Once revealed such problems may serve only to highlight the tensions that exist in cities, between built and natural world, between humans and non-humans, between the large variety of people and their various needs, preferences, daily activities and usage of space.

Creative practices and especially arts-based methods have been demonstrated to be effective in revealing and building empathy towards hidden concerns as well as bringing them to light so that they can be examined. Urban design itself is a form of art and has been from the early days of Vitruvius. Combining creativity of city visions and creative practice show promise in helping to both reveal and resolve tensions and to create spaces that are not only sustainable and secure for current and future human and non-human species but which are enjoyable to inhabit. *Future personas*, in particular, show potential as artefacts to support a more-than human design process, especially when they are designed and tailored to a specific context and need, and supported by available data and other information. In the future, perhaps there will be a playable city that promotes playfulness and interactivity of non-humans, that offers a sustainable, safe and welcoming habitat for them, too. A city that is hackable, where short term solutions are imagined and put into place to give help, as needed, to resolve environmental problems and support insect species survive. None of this is without precedent, there are examples across the world of such ideas. What is clear is that new creative practices are a way forward to creating smart, more-than human cities of the future.

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