Envisioning Urban Futures: from narratives to composites.

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Abstract: Design (and design research) have a rich history of developing ways of making possible futures visible and tangible through prototypes, models, scenarios, or visualisations. Less common are platforms that gather multiple perspectives in the same space about possible futures. Thinking about diverse, rather than alternative, futures is particularly relevant in the context of cities. This paper suggests an alternative way of developing future visions for cities, moving away from coherent narratives to more pluralistic composites. Using the Liveable Cities project as a mechanism for exploration, it reflects on how participatory design methods and information visualisation techniques can engage participants in developing visions of urban futures. The paper will describe the details of the approach. It will present a summary of the findings as well as a discussion on the methods, which will include challenges and shortcomings.

Keywords: Speculative Design, Participatory Futures, Urban Scenarios, Future Visions, Visualisation

1. Introduction

Design (and design research) has a rich and innovative history of developing ways of visualising futures through the use of sketches, models or prototypes (Evans, 2014; Margolin, 2007). In speculative design practices, these artefacts are in and of themselves outcomes of the design process. Their role is to make possible future worlds visible and tangible, so that they can be questioned, discussed and manipulated (Dunne & Raby, 2014).

Thinking about futures necessarily involves dealing with uncertainty and plurality: alternative futures will stem from non-linear combinations of social and technological processes (Urry, 2016), with multiple “futures” coexisting at any time. In this paper we highlight the value that participatory practices offer in discussing, and co-creating visions of futures. While decisions about future directions are often framed in rational and analytical ways, participatory speculations draw on everyday experiences, values, and conflicts to inform research and strategies (Forlano & Mathew, 2014).
We posit that futures, generated by a polyphony of multiple voices, should be envisioned in ways that enable their inherent pluralism to emerge as a defining characteristic of the vision. This is particularly important when dealing with the complexity of cities, the context of our research.

In this paper we will reflect on our experience to suggest how participatory design methods and information visualisation techniques can be used in combination to co-create and represent urban futures as “composite” scenarios rather than “coherent” narratives.

1.1 Designing Scenarios

Building scenarios is one way of making futures visible and tangible, when dealing with complex and systemic issues. As visions of possible worlds, scenarios bring in the conversation issues at multiple scales by presenting them as part of a shared space, and showing their interdependences and interactions.

Jegou and Manzini (2015; 2000) describe scenarios as communicative artefacts produced both as result and to further social conversations about possible futures that are described as realistic enough but still somewhat open-ended. Specifically, the scenarios that are created through design processes are those that Börjeson et al. (2006) define as explorative (“what can happen if…”) or normative (“what conditions need to be fulfilled for a specific target be reached?”), rather than the predictive (“what will happen?”) type of scenarios.

The starting point of the project described in this paper was the idea of involving various groups of people in creating scenarios of future urban living to be integrated into an ongoing larger discussion on what would it mean for cities to be “liveable cities”. The context of such discussion is a research programme called Liveable Cities, which involves interdisciplinary teams from five UK universities exploring possible futures for low carbon, resource-secure UK cities in which societal and planetary wellbeing is prioritised, with the aim of producing recommendations and guidelines for policy and decision makers.

As part of this program, we felt an important contribution that a team of researchers with design backgrounds could bring was in the design of what Carl DiSalvo (2010) calls “spaces for agonism”: i.e. platforms that enable open discussions in which diverse perspectives are brought forward. The results of such participatory, speculative practices are pluralistic future visions that can challenge researchers’ assumptions and proposed solutions.

In the following paragraphs, we will introduce the approach we adopted to co-create and visualise future scenarios of urban living, and will describe the methods we developed. We will then present the outcomes and findings from our study, and discuss how composite scenarios supported our understanding of the complexity of the subject matter.

2. Approach: envisioning urban futures; overview of the project.

This paper draws on a series of research activities conducted as part of the Liveable Cities programme. These activities took place between November 2013 and June 2016.

The project consisted of:

- a series of nine “Future Visioning Workshops”, each one involving a group of experts in a particular professional sector discussing and visualising future aspirations, fears and expectations about urban futures;
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- the development of an “Atlas of Imaginary Future Cities” as a way of collecting and representing the scenarios produced as part of the workshop series.

The two parts of the project contributed to the answer of a series of research questions. Some of these pertained to the content of the discussions, while others were about the methods of transforming these discussions into scenarios. Specifically, we asked:

- **RQ1**: Would visions of cities created by experts in different sectors be different to one another? And in what way would they differ?
- **RQ2**: What are the main issues emerging across sectors?
- **RQ3**: How can we visually represent the large variety of issues and articulate them in ways that support our understanding of RQ1 and RQ2?

This paper will focus in particular on RQ3, elaborating on the instrumental role played by composite scenarios.

2.1 Methodology

From a methodological point of view, the project adopted a Participatory Design approach in processes of creation and discussion of speculative scenarios (during the workshops), and methods of Information Visualisation to create an artefact (the Atlas) to represent the scenarios and their interrelations.

What is beyond the scope of this paper is the description of the design process that led to the methodology adopted in the study. This journey consisted of a succession of trials, failures, and learning opportunities. Refining the characteristics of our approach and developing appropriate sets of methods could be considered a project on its own. The discoveries we made during the journey undoubtedly contribute to shaping our understanding of participatory processes of speculative design and techniques for their visualisations.

The following two sections provide a synthetic account of the methods adopted in the two phases of the project.

2.2 Co-creating Scenarios: the Future Visions Workshops

The 9 Future Visions Workshops took place between February 2014 and March 2015. Each workshop involved between 8 and 24 participants from one of the following sectors:

- retail
- transport and mobility
- environmental and natural sciences
- heritage, culture, and archaeology,
- education,
- information technologies (IT)
- utilities
- ageing
- architecture and urbanism

Each workshop consisted of a set of five activities that engaged participants in discussions about possible futures and in prototyping sessions to transform ideas about the future into models of imaginary cities.

The structure of each workshop is outlined below:
• Introduction to Liveable Cities and the purpose of the workshop.
• Warm up. The participants were asked to think about what has significantly changed in their sector in the last 50 years.
• Negative Scenarios. This exercise was done in pairs, with each pair asked to respond to the following question: What is the worst thing that could happen to your sector in the next 50 years? (see Paragraph 3.1)
• Imagining futures in the city. We asked participants, working in pairs, to discuss possible urban futures with the help of a deck of “Thinking Cards” (see Paragraph 3.2)
• Designing the future city. All activities lead to this part of the workshop, in which we focused on the future of the sector in the city, 50 years from now. Participants were asked to design a future city from their own professional perspective, bearing in mind the issues that they discussed and heard about in the previous activity. The groups were asked to consider consumption and production practices—how, where and when people would consume, produce and live—what infrastructures would need to be in-place and what the general vision of the city would be (see Paragraph 3.3).

We audio recorded and documented each workshop through pictures. We used the workshop transcriptions to compile a series of reports, which we shared with participants. Finally, we combined text and images to compile the Atlas of Future Imaginary Cities.

2.3 Visualising Composite Scenarios: the Atlas of Future Imaginary Cities

After the first few Future Visioning workshops, we started to recognise connections and contradictions across sectors about what people would say and build. With every new workshop we were able not only to understand the scenario of the future city for the particular group we were working with, but also to add pieces of information to a mental map of the imaginary conversations between different groups. This map, however, was not captured in the set of reports that we produced as a first outcome of the project.

It became clear to us that in order to capture the content of the individual scenarios as well as the map of the overall landscape of possible futures (thus contributing to RQ3), we needed a communicative artefact that allowed us to:

• explore differences and similarities across issues discussed by different groups;
• move through layers of granularity based on the information: from a general overview to a very detailed one in which it is possible to read the exact words of the participants.

For this reason, we decided to adopt a cartographic approach for visualising the scenarios of urban futures developed in the workshop series. The Atlas of Future Imaginary Cities was conceived as an interactive visualisation that allows the reader to explore emerging themes, issues and ideas from the workshops at various level of detail. An Atlas is a collection of representations of a specific universe of objects that are considered systematically in their structures, parts, measures, shapes, and relations (Baule, 2006; Harley & Woodward, 1987).

The Atlas of Future Imaginary Cities is published online (seremiru.com/Atlas/export/index.html) as a continuous page that presents the overarching narrative. From this main map, readers can access the individual maps of the scenarios from each workshop. We created the maps and illustrations that form the Atlas by visually representing the data from the various workshops (i.e., after the data were
coded and analysed through a conventional approach to qualitative content analysis) (Hsieh & Shannon, 2005; also see Sadokierski & Sweetapple, 2014 for a similar method applied in Visual Design).

3. Findings: what did we talk about when we talked about the future.

In this section of the paper we introduce the urban futures envisioned during the workshops. We will use the Atlas to identify recurring themes and some relevant individual ideas.

3.1 The worst possible future

The “Negative Scenarios” activity in the workshop was designed as a way of getting negativity “out of the room”. Negative thoughts written on notes were collected in a box to metaphorically remove them from the rest of the conversation.

In the atlas, we did not include visualisations of people’s fears, like we did for its core sections. Instead, we provided a word-cloud map of the analysis with the following three themes:

- **People**: Cities would absorb ever-increasing populations, leading to social and economic inequality, unrest, increased crime, shorter life expectancies, poor health and discrimination. Although more crowded, people will experience an erosion of social interaction and trust of others and data, and increases in isolation, loneliness and immobility, especially among older people. Valuable skills and employment will be lost due to the automation of everything, especially in education.

- **Place**: Urban public spaces and natural environments will be reduced. Faster development will be prioritised over sustainable development. The built environment will be poor in quality, ugly and without context. Houses will be unaffordable, and cities will only be enjoyed by the privileged. Pollution and congestion will increase, leading to greater climatic variation and natural disasters. Vital resources will decline as will the adaptability of crops, leading to city-scale wars over remaining resources.

- **Systems**: Governance will change – or remain the same – for the worse, bringing about a short-termist planning system, an inadequate pension system, an over-controlled Internet and widespread corruption. Global economic collapse or recession also will occur, resulting in unsustainable economic growth, rising costs and black markets, lack of diversity in investments and budget cuts. Affordable energy will no longer exist, and increasingly politicised debates will obstruct public discussions on alternative options.

Once the “Box of Negative Scenarios” was took out of the workshop space, we moved on to an activity designed to stretch participants’ imagination and explore possible futures.
3.2 Imagining possible futures

In this activity, we asked pairs of participants to think about possible futures: What will they look like? How will we live in them?

We distributed sets of “Thinking Cards”\(^1\) to inspire and provoke participants to think beyond their expectations and assumptions about the future. We encouraged silly ideas and we made available different materials to visualise or explain ideas (e.g., sticky notes, marker pens).

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\(^1\) There are four categories of “Thinking Cards”, and each card presents one single issue that might become relevant in the future. These issues are part of future, low-carbon scenarios being developed as part of Liveable Cities, and are grounded in theory. The categories are: ‘environment’, ‘society’, ‘technology’, ‘politics/economy’. The front of the card includes a deliberately enigmatic image and a short title. The back of the card clarifies the title of the card through a short descriptive paragraph.
The content of the discussions in the various workshops are visualised in the Atlas through a series of diagrams that map the individual conversations as well as the constellation of the themes discussed across workshops (Figure 2). This constellation shows that the five most discussed issues overall are:

- Impact of technology on daily life
- Spaces for communities
- Sharing and collaborating
- Services and access
- Equality and inclusiveness

Overwhelmingly, what participants imagining futures are mostly concerned with is the way we will live with others, not only in neighbourhoods, but also as digitally connected communities. For the most part, in fact, the future discussed here is not the complex system of large-scale phenomena. Rather, it is a human-scale one. Services, infrastructures, policies, and objects are described as platforms designed to support social life.

New and emerging technologies are often mentioned as a way of contextualising the scenarios. They locate the conversations in undefined futures, and identify how this will be materially different from the present. Again, these technologies are not the protagonists of the discussion, but are described for the way the will influence or disrupt social practices.

While the constellation in Figure 2 shows the presence of overarching themes, the maps of the individual workshops show important differences between the futures described by the various sectors (see for example Figure 3)

![Figure 3 maps of the conversations in the Utilities, Transport, and Education sectors. The key themes discussed in the paragraph ('efficiency', 'slowness', 'food') are highlighted](image)

For example, “efficiency” appears in the Atlas as one of the most talked about issues overall, but a closer look at the individual maps shows that it does so only because of the great importance that this topic had in the workshop with members of the Utilities Sector. While this was somewhat unsurprising (because of the importance of efficiency for people dealing with utilities), other maps reveal more curious details. For instance, “slowness” was a relevant theme in the future as imagined by members of the transport sector. Participants envisioned a city designed to promote slow mobility and social interaction, digitally enabled ways of working remotely, as well as a new set of values, prioritising a much slower pace of life.
Another interesting observation emerged from the way private interests and professional expertise are entangled in the conversations. Some participants in the “Education Sector” workshop, for example, had a strong interest or direct involvement in food growing practices. The mix of professional and personal opinion leads to some interesting ideas when “food” was brought into the conversation. Creative suggestions of growing and cooking education for children and parents, and bio-domes for crop production, were discussed.

3.3 Designing the future city

![Participants designing future cities in various workshops](image)

In the final workshops activity, we asked participants to transform the principles and themes that emerged from the open discussions into design ideas for future cities. To do so, we traced on a large sheet of paper the arbitrary boundaries of a fictional city and asked participants working in groups of 8 to 10 people to use the material provided (building blocks, string, coloured paper, sticky notes, markers, and human figurines) to represent their design ideas. After the workshop, the audio and visual recordings were coded, analysed and visualised in the Atlas.

Like in the previous section, this part of the Atlas combines the overarching narrative with the individual conversations. It does so through a map that locates all of the cities designed in the various workshops in a fictional region. The fictional, topographic map is overlaid with additional information on themes and ideas, and their relation to the various sectors. Each individual city is linked to a dedicated page of the Atlas, which includes an isometric illustration of the city and its detailed description.
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The regional map and the overlaid information show the importance of some recurring themes, in particular those of “sharing”, “car-free” and “green/blue” cities.

The principles of equality, sharing, collaborating, and connecting that dominated the open conversations in the previous activities were transformed into design ideas for shared transport, sharing economy practices and the abundance of shared spaces and common goods that are available for all citizens. For the most part, cities were envisioned as car-free: roads are non-existent or redesigned as infrastructure for alternative means of transport (like bikes, mobility scooters or even tree-top cable cars). Car-free-ness also influenced the structure of the city itself. Most cities designed in the workshops were either small or polycentric cities, constituted of networks of highly connected yet independent neighbourhoods.

Another striking feature of the map was the predominance of green and blue spaces in the landscapes. The lack of roads and invasive infrastructure, the atomised structure of most cities and the importance of the commons made nature accessible by all residents in the cities.

Interesting insights can be gained by exploring the individual cities. Each sector brought their expertise in designing solutions to specific challenges. For example, the Heritage and Archaeology sector, reflecting on the importance of intangible heritage, designed a fluid Heritage Centre:

“we included in our city a Heritage Centre that is normally empty, and gets filled by people exploring their own heritage in their own way, rather than presenting a static narrative of the town. This is also where the digital space becomes important, because it is self-curated”

Another example comes from the Science and Environment sector, whose participants provided integrated solutions for energy and waste:
“We have a bio-mass fuel converter which doubles up as a recycling station, and a small clean nuclear power plant”.

Figure 6 The city envisioned by the Transport Sector

4. Discussion

The previous section of this paper presented the recurring themes that emerged from the workshop series as well as a sample of individual, workshop-specific ideas. We showed that, while patterns of data can be used to understand overarching values and most pressing matters of concern, it is important not to miss the context-specific issues, the insights and the design ideas that can be found in the individual conversations.

These findings may help us to understand the value of composite scenarios as a way of representing conversations about futures as a whole, but also in their individual parts. This, in turn, demonstrates the potential of bringing speculative design, participatory practices and information visualisation together. In particular, the benefit that information visualisation methodologies and tools bring in this context is in the ability of its artefacts to act as “macrosopes” (De Rosnay, 1979), i.e. tools that make complexity visible.

In this study, we used the term “composite” to indicate the non-linear combination of often divergent or contrasting parts. It is intended as the opposite to the idea of visualising futures as individual narratives. Compositing as a method is used (most commonly in photography) as a way of blending separate images together as part of the same scene. By playing with the granularity of data and the point of view of the observer, Information Visualisation allows us to build composite visions that show the overarching messages when seen from afar, but that reveal small details when observed more closely. In the Atlas, we used the possibilities of interaction offered by the digital medium to allow the user to move through different points of view and various levels of granularity.

We also encountered some challenges when making the Atlas. These were mostly related to the technical aspects of using Information Visualisation methods to represent futures. Unlike other cases of Speculative Visualisations (Kim & DiSalvo, 2010), what is visualised in the Atlas are conversations about imaginary possible worlds, rather than data about present or predicted situations intended to
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provoke a debate about futures. Visualising information about speculations involves finding ways of visualising uncertainty as well as various degrees of modality (on what “will”, “could” or “might” happen).

Information Visualisations employs diagrams to highlight hidden patterns of information (Scagnetti, Ricci, Baule, & Ciuccarelli, 2007). But diagrams (sometimes involuntarily) suggest certainty and accuracy. This is why we chose in our work to include surreal illustrations that leave room for subjective interpretations and questions. The visions of futures that have been generated in the workshops are in fact explorative scenarios, rather than plans that provide clear directions or strategies.

Finally, we would like to conclude the discussion of our findings with an observation on the unfinished nature of the Atlas of Future Imaginary Cities and of composite visions in general.

The ultimate purpose of cartographic atlases is to include in one artefact the entire geographic knowledge of the World, so that readers exploring its pages can be certain that all the places that are known at the moment of compiling the Atlas can be found in the book. Conversely, the Atlas of Imaginary Cities does not encompass knowledge, but rather invites readers to explore uncharted spaces for further discussion. After all, any project seeking to open the space of visualisation to a plurality of voices is inevitably unfinished, as there will always be more voices that could be included in an open-ended conversation.

5. Conclusions

This paper reflected on our experience to show how participatory design methods to build future visions require tools to capture the complexity of the discussion, rather than just synthesizing the results into a single, narrative vision. We have discussed how information visualisation methods can be used to do so through composite scenarios produced as part of, and to further, social conversations between multiple stakeholders. Scenarios created as composites show both the overarching narratives and main themes, but also the individual and often diverging or conflicting ideas hidden within the conversations.

This study was conducted as part of a larger academic programme that researches possible futures for liveable cities in the UK. Our approach in this context challenges solely rational and analytic ways of looking at the future, by allowing controversies, diversities and conflicts that characterise the city to emerge. Thinking of imaginary, often surreal, cities does not, in itself, bring about change. What it does do is challenge assumptions, propose unthinkable alternatives and highlight unforeseen conflicts. And perhaps, how to move from visions to action is the next quest for design.

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