

# Visual conversations on urban futures. Participatory methods to design scenarios of liveable cities

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**Abstract:** Visualisations of future cities usually depict coherent scenarios that rarely express the complexity of urban life. Our research explores ways to articulate conflicts and diversities, rather than mitigate them, when reflecting on possible futures for urban life. We define Visual Conversations on Urban Futures as visualisations of future scenarios that utilise visual methods to generate, facilitate, and represent dialogues of multiple voices imagining possible futures for life in the city.

This paper will introduce our research on this topic and reflect on a number of significant examples to draft a description of methods and processes of Visual Conversations on Urban Futures. It will then present three design experiments in which we adopted this approach in the context of interdisciplinary academic research on possible scenarios for urban futures. Finally, as this is an ongoing research project, we will suggest a number of open questions and possibilities for further practical and theoretical exploration.

**Keywords:** visualisations; urban futures; scenarios; participatory design.

## 1. Introduction: imaginary urban futures

This paper is part of a broader research study that reflects on the role that visualisations can play in supporting interdisciplinary research on urban futures and in orienting design processes.

In particular we ask: how can the diversity that characterises the city be represented in visions of future, to give voice to different, often diverging ways of living and experiencing it? How do these visualisations contribute to inclusive design and research actions aimed at envisioning, prototyping, and reflecting on possible scenarios for liveable cities?

A look at the history of visualisations suggests that visions of futures can be much more than stylistic exercises. Visualisations of future cities contribute to our social imaginary. They can, and have been used as speculative objects for imagining new possible ways of living as communities (Dunn et al., 2014).

The history of the United Kingdom, where this study takes place, is rich with examples in which visual methods are used to imagine and reflect on futures of cities. Howard's diagram of Garden Cities of Tomorrow published in 1898, and contemporary of Booth's map of poverty in London, is perhaps the most well-known and influential example of future city vision. As a radical alternative to overcrowded Victorian British cities Howard proposed a vision of a hybrid town that combined aspects of urban and country life. Plans, maps and diagrams were used to address social issues as much as to make the yet to be realised vision tangible to the reader.

The search for new models of urbanism aimed at reinventing new ways of living in cities and towns, became even more relevant after the Second World War, when the need for rebuilding cities, their economy, and their social structure, further encouraged analysis and imaginative visual experimentations. Though often grounded on spatial models of urban forms, the key theme in UK future cities visualisation is their fundamentally civic nature (Dunn et al. 2014). From the egalitarian plans for London envisaged by Foreshaw and Abercrombie (1943), to the neighbourhoods of connected communities that Alison and Peter Smithson opposed to Corbusian visions of divided cities, to Archigram's playful reconfigurable cities, the first few decades of post-war Britain were effectively a laboratory for the social imagination of new ways of living. While some of these visions developed into concrete plans for neighbourhoods, housing projects or new towns, others have never been realised, but played an important role in the debate on urbanism.

Images of the future are products of the cultural context in which they are created. At the same time, they can have a significant influence on the culture in which they are disseminated (Cook, 2012). Yet, the reflectivity of the highly contextual message and the place-making agency that these visions articulate often gets lost in more recent examples of future visions, particularly in the case of "smart cities": generic, ahistorical, professedly apolitical spaces whose identity is defined by information technologies that could be adapted in any context (Greenfield, 2013; Hollands, 2008).

In a moment in time in which cities are facing new challenges and are called once again to radical actions of systemic redesign and social restructuring, we aim to reclaim visions of urban futures as artefacts built through participatory methods that enable, support, and document localised social conversations on imaginary (yet attainable) utopias that radically question the present, and show what we think is impossible as possible (Levitas, 2013).

But if visualisations are to be used in speculative and creative conversations, how do we represent disagreement and diversity of opinions and experiences? Our research focuses, in particular, on techniques and processes that allow divergent visions from various stakeholders to emerge. It explores ways of visualising possibilities for life in future cities that include and valorise plurality and agonism (DiSalvo, 2010), rather than present (as it usually happens) only one story. We call this approach "Visual Conversations on Urban Futures".

The following paragraph provides a working definition of Visual Conversations on Urban Futures, and reflects on the role that they can play in producing design-orienting scenarios. We will then describe three cases in which this approach have been adopted. In the conclusions of the paper, we will discuss open questions and suggestions for further research, as we see the need and potential for more studies and experimentation.

## 2. Visual Conversations on Urban Futures

We define Visual Conversations on Urban Futures (VCUF) as visualisations of future scenarios that utilise visual methods and tools to articulate multiple voices discussing possible futures for life in the city.

Latour's actors-network theory inspired the development of a growing number of methods of mapping controversies of unfolding events and current matters of concern (Venturini, 2009; Venturini, Ricci, Mauri, Kimbell, & Meunier, 2015), but there is no established equivalent for mapping controversies and pluralism in imaginary futures. Talking about futures is always problematic: opinions count as much as facts, the boundaries of the spectrum of possibilities blur, and ideologies might substitute logic in driving choices. Furthermore, when urban life is the subject matter, very different experiences can coexist in the same space (as subjective or psychogeographic maps show). It is therefore challenging to design visualisations that can act as "macrosopes" (De Rosnay, 1979) that delve into complexity and represent it in ways that make it legible, understandable, and usable.

But although there are no definitions or structured descriptions of Visual Conversations on Urban Futures, prototypes can be found in design, art, and architecture. These examples show the great variety of methods and media that have been adopted in participatory processes of imagining futures cities.

To contribute to the discussion and the development of methods for VCUF, a significant part of our research consists in documenting those experiences that can be found in the literature and in various forms of art and design practice. Our growing online archive (<https://subjectivefutures.wordpress.com/>) shows an incredible and unexpected variety of ingenious methods adopted in different historical moments to visualise multiple voices debating possible urban futures.

### *2.1 100 years of Visual Conversations on urban futures. A selection of examples*

The earliest example listed in the archive dates back to 1919, when Bruno Taut initiated a secret correspondence project known as "The Chrystal Chain" (Whyte, 1985). This little known experience was aimed at extending the debate on utopian urban futures to German architects working outside Berlin. Drawings, ideas, questions and criticisms were exchanged in heavily annotated and visually dominated letters, produced and exchanged in a collaborative process regulated by strict rules.

Between 1967 and 1978, a Parisian group of architects and social scientists started publishing their thoughts on contemporary and future urban life in the magazine “Utopie: Sociologie de l’Urbain”. This collective project was the material evidence of an ongoing dialogue that deliberately put ideological and iconographic differences on the foreground (Buckley & Violeau, 2011). The layout of the magazine was designed to visually reproduce this dialogue, with its fights, overlaps, and critiques. In particular, the “colonne critique” (critical column) was a visual device consisting of a large page margin containing texts and images that contradicted or problematized the content from the central column. Visual writing (through drawings or collages) was a predominant mode of expression in the first issues of the magazine (Colomina, 2010).

A common frustration that members of Utopie encountered was the inability for them to move beyond the critique of the present and think constructively about the future. As Fredric Jameson once wrote: it is easier to imagine the end of the world than a radically different society (2003). Games have been found to help overcome this issue. Critical play, in particular, (Flanagan, 2013) can be adopted as a process to speculate about alternative futures. In the experience of play we are able to forget the present, suspend our disbelief, and accept the rules and space of action defined in the game by voluntarily participating in the “magic circle” (Csikszentmihalyi et al., 1982). Games have often been used as platforms to enable Visual Conversations on Urban Futures to happen. “World Without Oil” and “Maker Cities” are two recent examples of online multiplayer games developed by the Institute For The Future.

Communication technologies have also been used to enable conversations, particularly through interactive platforms that users can contribute to by submitting comments or ideas. Imaginable Guidelines, for example, is an “open-platform collaboration tool” to involve citizens, municipalities, and advocacy groups in creatively rethinking their neighbourhoods. Although the project is based in Istanbul, users from around the world can submit design ideas for the cards that are used in idea-generation games. The aim of Imaginable Guidelines is not to seek for agreements, but to extend the conversation by producing more, often divergent, ideas for “imaginable” guidelines.

### **3. Experimenting with the approach in academic research on future cities.**

The examples introduced in the previous paragraph, as well as the many others that can be found on the online archive, show the great variety of contexts in which Visual Conversations on Urban Futures can be conducted. For this reason, rather trying to formalise a set of methods or detailed guidelines, we decided to contribute to the research on this approach through our practice. We have been conducting, documenting, and reflecting on a series of design experiments (Eriksen & Bang, 2013) in a specific context: interdisciplinary academic research on future cities.

What initially brought the authors together was the involvement in several academic projects and programmes investigating scenarios and solutions for cities in the future. As part of larger interdisciplinary teams, one of our tasks was to translate the outcome from research and stakeholders involvement into visualisations of future cities. Rather than simply producing images to summarise and communicate a research project, we took this opportunity to explore the role that future visions developed as visual conversations could have in academic research.

In particular, we focussed on:

- **visual writing:** by reflecting on how we can use visual language to represent complex and heterogeneous stories and ideas about the future in a way that enables the reader to explore future scenarios in a non linear way;
- **participatory scenario making:** in which one theme or idea is unpicked and reworked by multiple and heterogeneous actors enriching and problematizing a scenario;
- **creative speculations:** conversations to open up and expand the scope of research to include new, radical ideas that might challenge our assumptions.

## 4. Design experiments

The following paragraphs describe three case studies in which we applied the VCUF approach to academic research. For the purpose of this paper, we will present each experiment as corresponding to one of the three models presented above.

- “Living in the city” (Paragraph 4.1) will describe an experimental project of translating a research paper into visual form (*visual writing*).
- The Sharing Cities case study in Paragraph 4.2 reflects on ways to use visual methods to involve a heterogeneous group of stakeholders in reflecting on the possibilities and implications of thinking of their city as a “sharing city” (*participatory scenario making*).
- Finally, in Paragraph 4.3 we will describe how we are using Visual Conversations to open up spaces for discussing imaginary cities of the future and explore how we might live in them (*creative speculations*).

### 4.1 Living In the City – an experiment in visual writing

This paragraph introduces an experiment in using visual methods to represent research.

In February 2014, the UK government Foresight Future of Cities project commissioned a team of researchers a report entitled “Living in the City”, to understand what would be possible scenarios for UK cities over the next 50 years. The published paper is concerned with the nature of city living, looks at how urban lives have changed in the last 40 years, and established a range of possible urban futures for the middle of this century. The report also

sought to bring together different areas of research in the sociology of living the city that are normally thought of separately, in order to highlight their interdependencies. To help doing so, the publication included visual representations of each scenarios, designed in a way that made connections, flows, and correlations visible while highlighting the main features of the depicted futures (Urry et al., 2014).

#### 4.1.1 Process

The process of translation from the written to the visual form started with mapping the recurring ideas and categories in the main text. The information coded in this way was then organised in a layout that was used to produce preliminary sketches of the visualisation.



Figure 1 Coding of the research and early sketch of the visualised scenarios

The visualisations and the paper were produced almost simultaneously. Most of the reviews to the text were made through comments and additions to the Word document. It became evident that a similar process to collaboratively edit and comment on the visualisation needed to be created.

A shared “Draw” document on Google Drive seemed to be a suitable way to involve researchers that are not familiar with graphic design techniques or software. The file created at this stage of the process included all the relevant elements of the visualisation, albeit in a very simplified way. Everyone with access to the file could both add comments and modify it. However, it must be noted that very few comments and edits have been made on the shared file by the group of authors.



Figure 2 Shared sketch of the scenarios intended for remote collaboration and feedback

4.1.2 Outcomes

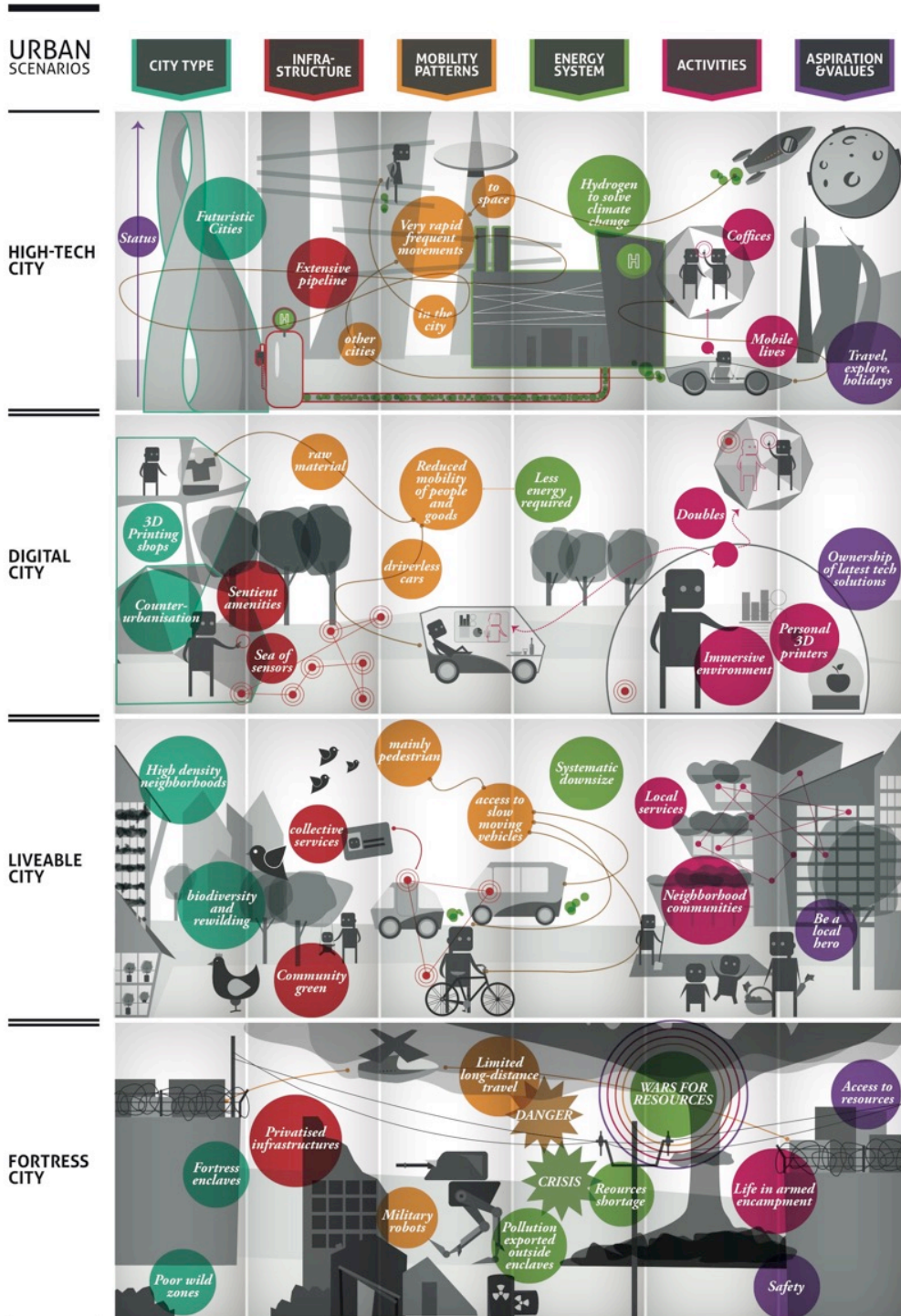


Figure 3 The visual scenarios as presented in the report

The published version of the visualised scenarios can be seen in [Figure 3](#).

The paper grew by weaving together the contributions of four authors with different backgrounds and areas of expertise. The visualisations helped transform coherent narrative descriptions of the scenarios into an explorable map in which the different disciplinary areas are unpicked and made visible. For example, the reader could easily compare the patterns of mobility in the different scenarios. For this reason, the visualisations have, since their publication, been used independently from the paper to generate discussions in a number of workshops or presentations.

## **4.2 Liveable Cities as a context**

The following two projects have been carried out as part of the Liveable Cities programme, which is worth introducing briefly at this point to provide a context for the description.

Liveable Cities is a five-year interdisciplinary programme funded by the Engineering and Physical Science Research Council (EPSRC). It involves engineering, social science, and design departments from five UK universities (University of Birmingham, Lancaster University, University College London, and University of Southampton). The core objective of Liveable Cities is “to transform the engineering of cities to deliver global and societal wellbeing within the context of low carbon living and resource security through developing realistic and radical engineering that demonstrates the concept of an alternative future” (“The Liveable Cities Project - Liveable Cities,” 2013.).

Future thinking and future envisioning are key activities in the programme, and methods for Visual Conversations on Urban Futures have been used as part of the research in several occasions, such as the “Sharing Cities” thought experiment presented in paragraph 4.2 and the Future Visioning activities described in paragraph 4.3.

## **4.2 Sharing Cities – participatory scenario making to discuss a “what if?”**

“Sharing City” was a three month “thought experiment” aimed at developing scenarios of desirable and provocative urban futures in the form of social conversations to influence policy recommendations and new prototypes.

Sharing cities are understood to be cities where sharing, commoning, and collaborating are the main paradigms (Gorenflo et al., 2013; McLaren & Agyeman, 2015). Sharing cities have been described as a possible way forward to achieve “just sustainability” (Agyeman, 2013; Agyeman, McLaren, & Schaefer-Borrego, 2013). However, very little coherent, critical, published material is currently available on the topic, and existing literature often focus on specific aspects of sharing. Various, often conflicting actors have been using the term “sharing city”, such as local governments, grassroots initiatives, and sharing economy companies, with the aim of promoting their approach or lobbying for more permissive regulations.



For this reason, the in-depth study that Liveable Cities conducted on the notion and possibilities of sharing cities included the development of platforms to give voice to groups of heterogeneous actors involved in initiatives of sharing. Sharing and collaborating are, in fact, dynamic and highly contextual activities, for which active participation is key. For this reason, understanding local assets and initiatives is a necessary preliminary step to the creation of scenarios of future possibilities.

#### 4.2.1 Process (conversations)

A set of methods for the creation of future scenarios of sharing cities as visual conversations was prototyped through a workshop that was conducted first in Lancaster and later on in the wards of Moseley and Kings Heath, in Birmingham.

Each workshop was divided into two sections:

- **Mapping the sharing city:** in which sharing is made visible and tangible, by mapping and outlining local initiatives of sharing and unveiling existing or potential connections between them.
- **Envisioning scenarios of sharing cities:** connecting what happens now on a small, disconnected scale, to ideas on what would happen if these solutions were amplified, new services and infrastructures were created, and obstacles were removed.



Figure 4 Images from the "Sharing City" workshops. On the left: a participant contributes to the local map of sharing (Lancaster). On the right: designing scenarios for Moseley and Kings Heath (Birmingham) as sharing cities.

The workshops involved a series of hands-on activities of mapping and envisioning as well as moments of in-depth discussion. A delicate balance between structured formats and open discussions allowed us to capture a large number of information, some of which would not have been uncovered without the conversations that happened while producing the maps and the scenarios. We included these findings in the reports and visualisations produced after the workshops and distributed to the participants and the broader Liveable Cities

research team. At the time of writing we are combining the outcomes from the workshops with the rest of the findings from the Sharing City project.

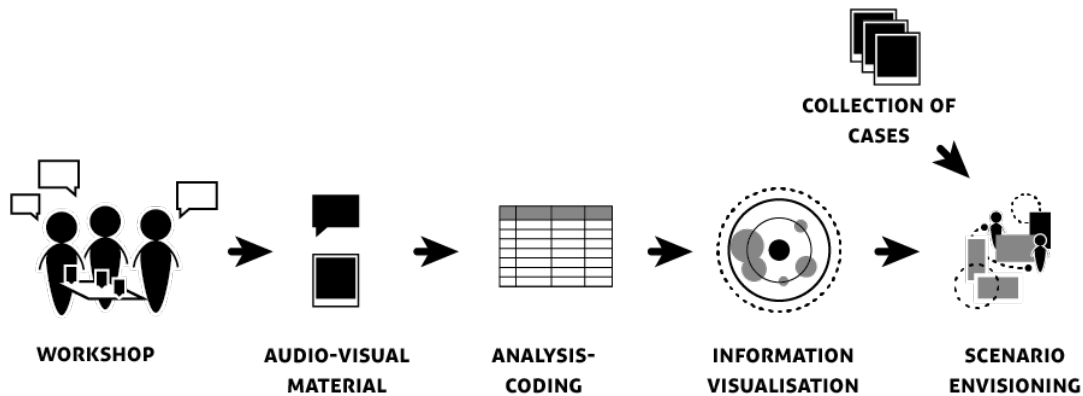


Figure 5 Design process for creating localised scenarios of sharing cities

#### 4.1.2 Outcomes

The combination of open conversation and visual outputs allowed us and participants to understand the subtle, hard to map aspects of their experiences with sharing, while producing at the same time sets of tangible outputs to make ideas visible and usable in further conversations.

The interactive report from the two workshops, which includes the maps of local sharing and the future scenarios can be downloaded from the Liveable Cities website:  
<http://liveablecities.org.uk/outcomes/sharing-city-workshop-report>

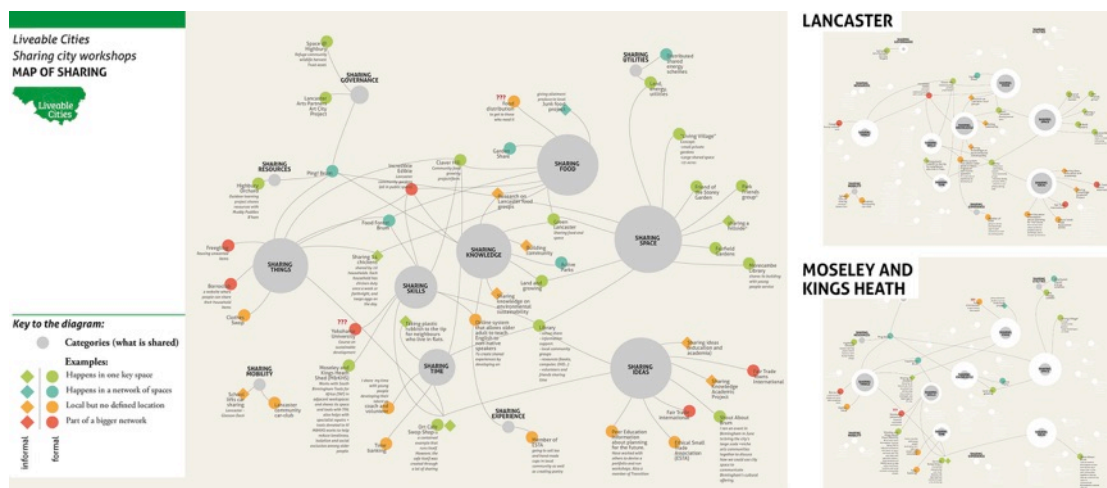


Figure 6 Reproduction of the interactive map that represents current sharing initiatives in Lancaster and in Birmingham’s wards of Moseley and Kings Heath.

**IF MOSELEY AND KINGS HEATH WAS A SHARING CITY**

*A future scenario from the Birmingham Sharing City Workshop*  
7 September 2015

The scenario below is a visualisation of the ideas that emerged from the final activity of the Birmingham Sharing City workshop. In this activity we asked participants what would it take for Birmingham (in particular the wards of Moseley and Kings Heath) to become a 'sharing city': what would they create, amplify or destroy?

In this scenario we combined the different conversations, and identified themes and ideas.

Further information:  
www.liveablecities.org.uk  
shareableandliveable.wordpress.com

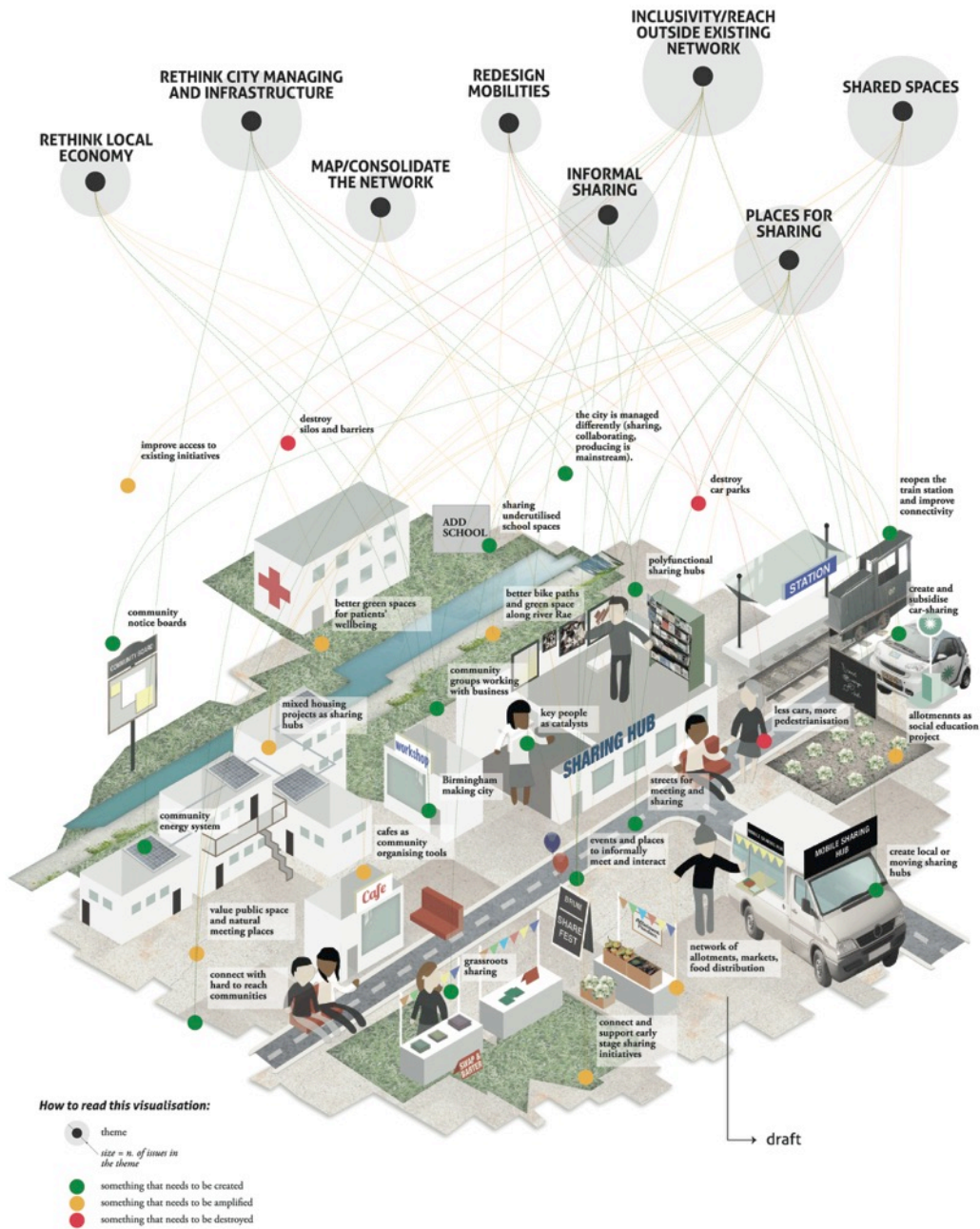



Figure 7 Poster of the scenario of Moseley and Kings Heath as a sharing city.

Using visual methods to facilitate and represent the sharing city allowed us to map different dimensions of sharing and combine and relate ideas about possible futures. Furthermore, it allowed us to communicate academic research and its relevance to a general audience.

### 4.3 Future visioning – creative speculations on multiple futures

The third case study that we are presenting as an example of using Visual Conversations on Urban Future as an approach to imagining and reflecting on alternative scenarios is the Future Visioning project that was organised as part of Liveable Cities. This research activity is divided into two parts: a series of co-creation workshops, and the analysis and visualisation of the outcomes; this phase is still ongoing.

The Future Visioning research project aims to broaden the scope of academic research by involving a diverse group of leading experts in various sectors to imagine “unthinkable” urban scenarios for future cities. These scenarios seek to question our assumptions on what is desirable by highlighting conflicts, alternative solutions and unconventional ideas, as well as differences and commonalities in fears and aspirations. The outcomes from the research seek to inform design and engineering recommendations developed in the Liveable Cities programme.

This research activity involves Visual Conversations at two moments:

- **During the workshops.** A series of tools and hands on activities have been designed to facilitate discussions in which participants imagine and represent cities and ways to live in cities that are radically different from now.
- **For the analysis and communication of the outcomes.** In order to explore the differences and similarities across issues discussed by different groups, visualisations are being used as the primary research outcome, rather than being used in combination with written reports.

#### 4.3.1 Process

Between February 2014 and June 2015 we conducted nine Future Visioning workshops. Each workshop was sector-specific, and involved experts discussing possible futures for the city in relation to their sector. The workshops were 2 hours long, to allow a number of activities and structured conversations to take place, while making it possible for busy professionals to participate.

Enabling blue-sky thinking and the generation of radical ideas in such a short time was problematic. We wanted to push the conversation beyond the familiar and expected, and encourage participants to be as imaginative as possible. For this reason, several versions of the workshops had been designed, prototyped, and evaluated, before finding an engaging way to involve participants. The list of activities described below outlines the final structure of the workshop:

- **Warm up:** Participants were asked to think about what has significantly changed in their sector in the last 50 years.
- **Time-limited negative Scenarios:** In this exercise, participants worked in groups to answer the following question: What is the worst thing that could happen in the next 50 years to the city and/or to your sector?

- The future liveable city:** This exercise was designed to stretch the participants' imagination and push their time horizon. It was done in pairs, with each pair given four 'Thinking cards' to help them imagine what a future liveable city could be in terms of what that city would look like and where people would live fifty years from now. Silly ideas are encouraged and pairs could use different materials to visualise or explain their ideas. There are four types of "Thinking Cards" (environment, social aspects, economy and politics, and technology), and each card presents an issue that might become relevant in the future. These issues are included in the future low-carbon scenarios being developed as part of Liveable Cities, and are grounded in theory. This helped to contextualize the future imagined by participants within the Liveable Cities research framework. However, participants were free to question or reject the cards.
- The future city building:** In this part of the workshop we focussed on the future of the sector in the city, fifty years from now. Participants were split into two groups, provided with an array of materials (e.g., coloured blocks to represent buildings, small people, tissue paper) and asked to design a future city from their own professional perspective, bearing in mind the scenarios they created and heard about in the previous activity. Specifically, the groups needed to consider consumption and production practices, what infrastructures would need to be in-place and what the general vision of the city would be.



Figure 8 Two moments from one of the future visioning workshops (with architects and urbanists). On the left: using the "Thinking Cards" to imagine life in the future cities. On the right: designing the city of the future.

After each workshop photographs and transcriptions from the audio-recordings were combined in a report that was shared with participants and made available on the Liveable Cities website.

### 4.3.2 Outcomes

Since a core objective of the Future Visioning activity is to include non-academic contributions in defining and creating radical scenarios for UK future “liveable” cities, a key part of the project is the design of communication artefacts that help integrate the outcomes from the workshop with the rest of the research.

After attending the first few Future Visioning workshops, we started to recognise connections between what people would say and build across different sectors. Some ideas were recurring, others were described as problematic, and others were sector-specific. However, the connections that as a research team we could identify between the workshops, remained hidden in the reports that were produced as a first outcome. For this reason, we started experimenting with visual ways to translate the information into research outcomes. Unlike written reports, visualisations can enable the reader to move in and out levels of detail and complexity while exploring connections and controversies across visions in a non-linear way (Dondis, 1973; Manovich, 2011).

At the moment of writing, we are building an atlas as a tool for the reader to explore issues, worries and creative ideas from the Future Visioning workshops by navigating the collection of maps of fictional cities. The atlas will be shared online upon its completion (expected before June 2016) on the Liveable Cities website: <http://liveablecities.org.uk/>.

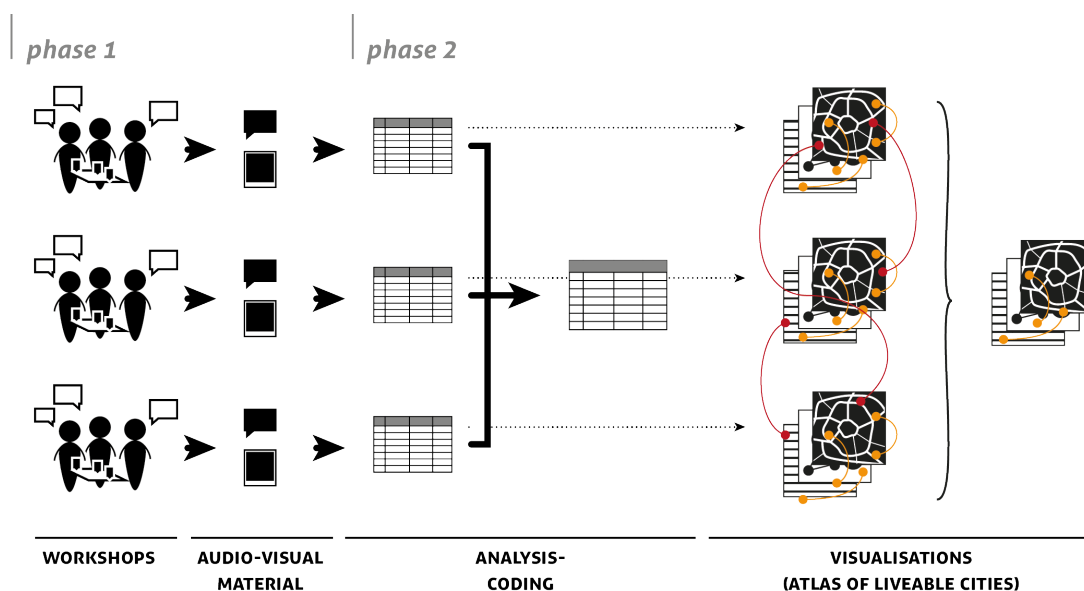


Figure 9 The process of the Future Visioning research project.

## **5. Discussion and directions for further research**

The three case studies described in the paper highlight the equal importance of processes and outputs in producing visualisations of urban futures through participatory conversations. For this reason, we see the visualisation process as a continuum, in which visual methods can be used not only to represent, but also to enable and facilitate conversations aimed at imagining urban futures.

One critical aspect of both the Sharing Cities and Future Visions projects was the design of activities to engage participants in participatory conversations. The structure of the workshops was tested and refined multiple times, as it became clear that there was a fine balance to be found between structure and openness. Structured activities, materials, and facilitation are necessary to frame the discussions and push its depth towards radical ideas, while a degree of openness is necessary to put people at ease, eliminate judgement, and extend the breadth of the conversation. The quality of the design of the workshops as platforms for the conversation had a direct impact on the quality of the outcomes that ultimately inform the visual scenarios produced as a result.

In both these case studies, designers interpreted the conversations to create the visualisations to be used in further research activities. Designers are not objective translators but themselves makers of meaning that gets brought into the artefacts that they produce. One of the ways to overcome the unavoidable bias is to design the interaction with the visualisation to allow the user to access the data sources. This aspect is currently being prototyped both in the Sharing Cities visualisation and in the atlas of Future Visions.

We do still however wonder whether is it possible to extend the participation of stakeholders to the making of the visualisations. We suggest that designing tools for visually self-documenting conversations could be a way to do this.

When designing the visualisations for the “Living in the city” paper, Google Draw was used as a platform to share initial sketches and allow co-authors of the research to contribute to the final outcome. This approach provides a technical solution to the problem of opening the design process to a multidisciplinary team, but it is still a middle-of-the-road solution, that can sometimes generate redundant and time consuming activities. In the case of the Living in the City report, for example, researchers involved in redacting clear and rigorous research were reluctant to then take time to participate in translating their finding in visual scenarios. Once again, we suggest that the key is in rethinking the process of writing and researching to open up early on in the process to alternative, multimodal, modes of communication (Kress, 2009).

As this research is at its early stages, a number of questions on the impacts and values of Visual Conversations on Urban Futures remain open. We argue, however, that the main reason for this is the lack of discussion and experiments in this field, particularly, but not exclusively, in the academic context, which could benefit from novel ways to conduct inclusive discussions on diverse and contrasting possibilities for future cities.

## 6. Conclusions

This paper suggested the need of developing and reflecting on participatory ways to produce inclusive visions of future cities that allow the controversies, diversities, and conflicts that characterise the city to emerge.

Visual conversations on urban futures are not themselves agents of change, but can offer a significant contribution in the early stages of processes of building scenarios for possible futures. Manzini and Coad (2015) describe scenarios as “communicative artifacts produced to further the social conversation about what to do”. This designerly way of imagining futures is ultimately about building alternatives to the dominant order by “making possible what appear(s) to be impossible” (Lefebvre, 1970, cited in (Buckley & Violeau, 2011).

While in times of urgent change seeking clarity and agreement might seem a much preferable route, we argue that articulating divergence is a necessary step to explore truly radical solutions. Stepping back from a solution-oriented approach allows us to critically question the present and the underlying assumptions of current research and political discourse on “growth” and “sustainability”.

This paper drew on research in which Visual Conversations on Urban Futures have been used as an approach to communicate research findings (“Living in the City”, Paragraph 4.1) or to promote speculative conversations in an academic context (Sharing Cities and Future visioning, Paragraphs 4.2 and 4.3, respectively).

We wish to encourage further experiments with this approach in different contexts beyond academia. To promote the growth of a community of interest, and to share methods, tools, and suggestions that could be applied across contexts and disciplines, a growing database of examples of Visual Conversations on Urban Futures is available online (website hidden for peer review as author would be immediately recognisable).

## 7. Acknowledgements

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