My Photostory, your Photostory, our Neighbourhood Photography with Captions in the Participatory Urban Regeneration Process

Matej Nikšič

Introduction

The paradigm of sustainable development places special attention on minimizing the environmental impacts of urban development. It favours processes of urban regeneration over greenfield developments. The clear prioritization of improvements in already urbanized areas aims at improving and doing more with the things we already have.¹ The reuse of the existing urban fabric is a comprehensive task, not only because the new standards and expectations of the end-users need to be met, but also due to the complexity of the stakeholder networks involved and affected by the process. Contrary to greenfield developments, the urban regeneration process will always encounter some actors that already exist within the space of concern. Thus, one of the challenges is the inclusion of existing users in regeneration activities.

This inclusion is of crucial importance in older residential areas with longtime established communities, but of which the built environment and its functionalities do not meet the needs of contemporary life anymore. On the one hand, existing users have their own aspirations and an imagination of the possible futures of their places. On the other, they know the places from a user's perspective much better than any (professional) visitor from the outside and can thus contribute valuable insights to the different phases – from the analytical and planning phases to the implementation of the steps of the regeneration process. An additional issue is the variety of points of view within the diverse community of residents – each may have their own ideas,² and getting to know a shared understanding of the state of the art is methodologically demanding in the practice of urban planning and design.

This paper illustrates how an urban regeneration process can potentially be enhanced by the active participation of a local community by using photographs with captions as the main medium for the exchange of knowledge. In the present case study, the residents of an older residential neighbourhood in suburban Ljubljana were invited to share their perceptions of the place through a newly developed tool called 'Photostory of Our Neighbourhood' (PON).

Theoretical Background

Community-based urban regeneration (CBUR) has become a popular approach for improving the quality of life in older urban environments.³ It addresses different aspects of sustainable development at once. Its participatory dimension makes it socially sustainable as it employs community activities and (re-)establishes the social ecosystems of a city.⁴ By upgrading and enhancing the already existing physical and functional assets of a city (instead of exploiting new assets) it is resource efficient,⁵ and by improving the urban fabric for the better it also makes the city more attractive and in turn more robust in economic terms.⁶ Despite its growing participatory dimension, however, urban regeneration also remains a professional activity situated between many disciplines. As a distinctively interdisciplinary and transdisciplinary endeavour, urban planning demands a great amount of coordination and harmonization between the involved disciplines to make them operational and reach the desired goals.⁷

One of the current issues of CBUR, which is being addressed extensively both in scholarly work and in practice, is the challenge of fully integrating the views of citizens into the urban regeneration process. Among other things, it is increasingly important to have the relevant, concrete methods and tools that actually work and can provide a shared basis for the different professional and community-based actors to contribute to. Since the 1990s, various attempts to achieve this can be traced in this field, of which many started as an experimental approach and only later became part of established practices.⁸

One such method is the photovoice, which was developed by Wang and Burris in their attempt to reveal people's needs in the improvement of health conditions.⁹ Since then, the photovoice has gained popularity as a qualitative and practical method for research, which allows the visualization of an individual's perceptions of their everyday life.¹⁰ The method is grounded in image-based material and its related narratives that offer insights into community issues. The use of photovoice accumulates community knowledge and, more importantly, can lead to the professional to better insights and to an understanding of a community's notions and perceptions of their living environment, which can lead to the development of effective and comprehensive strategies to address complex urban regeneration issues that will potentially not only be accepted but also be meaningful for the communities involved. For the community, the photovoice is an opportunity to share information with policymakers.¹¹

Over the last years, and along with the development of digital technologies, the photovoice became even more used in urban planning processes.¹² The fast development of a digital literacy is making the photovoice a more common and well-spread approach, yet, some methodological questions remain. One of the key concerns in the practice of urban planning is the question of how to expand the framework and include the steps to analyse visual images at a deeper level, to meaningfully influence not only decision-making processes in concrete cases but also policymaking as such.¹³

In these endeavours, a school of thought is emerging that approaches the issue through the framework of the emergent property.¹⁴ It is grounded in the assumption that even when the notions and perceptions of each individual member of a local community differ, there are also common characteristics of the community as an entity, where the community's characteristics are not simply the sum of the individual's characteristics – they are linked and act together. Getting to know such emergent properties of a local community can inform the urban regeneration process which in turn allows for the adaptation of the living environment to increase its likeability by responding to the residents' needs and desires, and thus to increase wellbeing.¹⁵

Methodological Approach

This paper presents explorative experimentation with the concrete tool within the range of the emerging photovoice approaches. The Photostory of Our Neighbourhood tool is based on digital photographs provided by the residents along with short captions of 200 characters at most. The development of the tool had the following goals: to establish an easy-to-use platform for revealing the assets of the neighbourhood as seen through the eyes of the residents; to establish a venue for public discourse where not only the negative aspects of the older environments would be discussed, but also where the positive characteristics would be promoted, thus making the residents aware of the qualities of their living environment and raising

their local pride; and last but not least, to activate the residents' participation in shared discussions on the possible futures of their neighbourhood. The final desired outcome of the experimentation was to test the possibilities of integrating some predefined, urban-planning-process-grounded elements into the tool that would allow an easier and more direct interpretation and integration of the gathered materials (photos and related narratives) into the urban planning process. In this way, the experimentation with PON differs from the previously developed photovoice approaches.

The Ruski Car Neighbourhood in Ljubljana: A Testing Bed for Reading the City through Residents' Participation

Between 2015 and 2018, a civil initiative called *Skupaj na ploščad!* (Together on the Platform!) and two institutions – the Urban Planning Institute of the Republic of Slovenia (UIRS) and the Museum of Architecture and Design (MAO) – joined forces to experiment with new approaches to participatory urban regeneration. The activities were organized within the Human Cities partnership established under the European Union's 'Creative Europe' programme.

The activities took place in one of the largest and densest neighbourhoods of Ljubljana, popularly called Ruski Car (in English: Russian Tsar), which was built on the outskirts of the Slovenian capital in the 1970s. The neighbourhood was thoughtfully planned with all of the facilities needed for daily life (such as local shops, sports facilities, a primary school and kindergartens). It has a distinctive urban layout, characterized by tall apartment blocks of up to 15 stories, which are attached to one another and have a clearly defined, street-like public space between them. In the decades after the construction, this open space functioned as a true social space in the neighbourhood and was, according to the memories of the locals, characterized by spontaneous encounters and children's play.¹⁶ Nowadays, the neighbourhood distinctively shows a different image – due to changed patterns in everyday life (long working and schooling hours, digitization,

motorization, etcetera). The large, open space is rarely used for social activities in the open air and at best serves as a transition space between the different parts of the neighbourhood.

However, this central and open space was recognized by many, both by professionals and residents, as one of the spaces that are the most underused, but have the highest potential for local life. To address this issue and to open a wider discussion about its qualities and opportunities, a group of residents organized the civil initiative Skupaj na ploščad! and started organizing public gatherings. The starting activities were meant to be simple and catchy to attract other local inhabitants, which resulted in the organization of themed social activities such as neighbourhood walks, open-air streetfurniture workshops as well as film screenings. These activities were meant to be a trigger for the development of a stronger and broader participatory approach to the urban regeneration of the whole neighbourhood. New actors joined the process along the way, among them the institutions from the field of participatory urban design. In a collaborative endeavour with the residents, the aim of such a joint approach was to develop a better understanding of the state of the older neighbourhood, seen through the eyes of the residents who live in the space and use it on a daily basis. Various new tools were developed to enable the residents to express their perceptions and points of view. Some of them were held in real time and on site, such as neighbourhood picnics and urban games, while others were developed online to include the residents who did not want or could not join the inperson activities.¹⁷

One of these tools was Photostory of Our Neighbourhood. PON is an online tool that invites any resident to express their own observations of the state of the neighbourhood through digital photography and a caption by contributing it to the common online database. Among other things, one of the goals of such observations of the neighbourhood was to be a starting point for a more active involvement of residents in conceptualizing the possible improvements of the neighbourhood through a moderated participatory process in the long run, as well as building a database that is at the disposal to any professional that has to deal with the particular space and its users in the regeneration process.

Focusing on the Positive Attributes of the Neighbourhood and its Shared Values

The interdisciplinary team of professionals from UIRS that developed PON had various experiences in participatory urban regeneration from other older areas before they got involved in the Ruski Car neighbourhood. These previous experiences showed that residents often tend to focus on the negative aspects of their older living environments when they are asked to share their opinions.¹⁸ Thus the point of departure of PON was rather specific: the tool aimed to encourage residents to reveal the positive aspects of their own living environment from the very start. Five thematic clusters were defined along the lines of urban regeneration objectives (see Table 1 for a detailed description): most pleasant place in my neighbourhood, professions in my neighbourhood, my neighbour, boundaries of my neighbourhood, shared values in my neighbourhood. These clusters aimed at encouraging the residents to seek out the positive aspects of their built environment, its social dynamics as well as its economic vitality.

Table 1: Five thematic categories of Photostory of Our Neighbourhood (PON).

Most Pleasant Place in my Neighbourhood

We usually spend a major part of our time in our neighbourhood, therefore its arrangements importantly influence the quality of our life. What are the spaces in the neighbourhood that I like, find interesting, and like to spend time in? What makes them pleasant? Is it because of the activities that take place there, the people that spend time there, street furniture, the presence of natural elements, or maybe the light and colours or details of the surrounding buildings? Try to show the places of your neighbourhood that you find pleasant and explain what makes them attractive through the photo and its caption.



Fig. 1. 'A concrete block of flats and a field of buckwheat are flirting' (category: Borders of my Neighbourhood). Photo: Helena Lapanje.



Fig. 2. 'Growing big from a small' (category: My Neighbour). Photo: Matej Vinko.

Professions in my Neighbourhood

Good neighbourhoods are not merely sleeping spaces, but places where different activities and programmes take place that cater to the needs of the inhabitants of the neighbourhood and the city. The bakery on the street corner, the sales person in a local shop, the driver of a bus that stops in the neighbourhood, the local gardener, etcetera. These are only a few of the more visible professions that importantly contribute to the quality of life in a neighbourhood. At the same time, there are many other professions that are more hidden to our eyes – people with different skills, abilities and knowledge. Present their activities through a photo and its caption.

My Neighbour

The fast rhythm of contemporary life and new ways of communication, supported by new communication technologies, are changing and often weakening contacts between people that live in the same space. With the help of a photo and its caption, capture the moments that show that neighbourhoods are inhabited by social beings who, despite changed ways of life, still come together, and still support and help each other. Street games, chatting on a bench in a local park, or ringing a neighbour's door because you have run out of flour while baking biscuits: these are examples of activities that join people together in a neighbourhood. Photos with captions in this category should show that lively neighbourhoods are inhabited by people who make good neighbours, instead of being complete strangers to each other.

Borders of my Neighbourhood

How far does my neighbourhood spread out? Where are its borders and what defines them? Are they physically, functionally, or symbolically defined? Borders may sometimes be clear and exact, sometimes blurry and fluid. Getting to know the borders is helpful to someone who tries to go beyond them, or to strengthen the distinctive identity of the space within. Present the borders of your neighbourhood with the help of a photo and its caption.



Fig. 3. 'Golden ear of wheat' (category: Most Pleasant Place in my Neighbourhood). Photo: Matej Vinko.



Fig. 4. 'The image shows a man selling chestnuts. He makes people happy with chestnuts and good temper' (category: Professions in my Neighbourhood). Photo: Domen Pukl Kopinč.

Shared Values in my Neighbourhood

What are the values that are shared by the inhabitants of my neighbourhood? What ideals unite us as a community? How are these reflected in space? And can they be a basis for common action by inhabitants trying to improve the living conditions of a neighbourhood? Values are an immaterial category, but are nevertheless often reflected in the physical and real environment. This category collects photos that show the state of the neighbourhood, reflecting the values of its inhabitants.

The residents were invited to share their own notions of their living environment through photography and short captions. In doing so, they expressed their personal notions in relation to the depicted environments within each thematic cluster. However, to better support the process of urban regeneration, besides the personal notions of each resident, the team of urban designers sought to learn what notions and perceptions were held in common by and shared among the residents. From previous experiences, the UIRS team knew that the synthetical interpretation of the submitted materials can only be partly helpful in this respect. In order to get deeper insights, the residents were therefore also asked to attach any number of predefined tags addressing the so-called shared values when submitting the materials to PON. These shared values were defined by the urban designers based on previous experiences in participatory urban design.¹⁹ They were seen as just as important as the captioned photography itself, as they could possibly form the basis for the development of scenarios for the possible future of the neighbourhood. Table 2 shows the list of shared values from which the residents could select.

Table 2: PON's shared values with definitions. (1/2)

Shared Value	Definition
Empathy	The ability to understand and share the feelings of others, despite different backgrounds and life experiences. Empathy creates a bond between individuals that ends up becoming part of their shared identity.
Wellbeing	A state of feeling healthy and happy. It is a contribution o society through knowledge, culture, design, music, ecology, healthy food or the renovation of public spaces. The main goal of wellbeing is to improve living conditions so that people can achieve a better physical and mental health.
Sustainability	Sustainability is concerned with meeting the needs of the current population without compromising those of future generations. It includes environmental, social and eco- nomic aspects.
Intimacy	The possibility of feeling a sense of closeness with people, objects or places.
Conviviality	Living together and sharing ideas, activities, discussions, etcetera, to create a common spirit, a sense of belonging around which people can gather and that they find meaningful.
Mobility	The capacity of citizens to leave their private spaces and move into public ones.

Table 2: PON's shared values with definitions. (2/2)

Shared Value	Definition
Accessibility	Being open to everyone and easily reachable. It has both a geographic and a social meaning.
Imagination	The ability of the mind to be creative with new images, ideas, concepts, etcetera. The imagination is the main source of images and dreams of new solutions to our daily problems.
Leisure	Free time. To be away from the demands of work and duty, when one can rest, take it easy and enjoy hobbies or sports.
Aesthetics	A visual attribute aimed at beauty, creativity and innova- tion, which provides an identity to a place.
Sensoriality	The mobilization of a person's senses, whether hearing, seeing, tasting, smelling or touching.
Solidarity	Solidarity is a unity of people sharing the same interests in order to help each other.
Respect	Respect is showing due regard to people's lives, opinions, wishes and rights. It implies that there are no barriers or stereotypes that come between us.

PON was used for the first time in the autumn of 2016. It was promoted through local social media platforms, while some residents were invited to join through the on-site activities taking place in Ruski Car, too. However, PON was not limited to this neighbourhood, anyone that wanted to contribute to the online database was welcome to do so as long as the rules of the game were respected.

Within two months, 172 entries were received and an online exhibition was prepared, later accompanied by an exhibition in Ruski Car's central, public, open space. At the same time, a public in-person event was organized where all entries were presented to and debated on with the locals in the format of a discussion forum. The event was not only an opportunity to strengthen the social relations in the community, but also a moment for the professionals to directly get in contact with the residents and address urban regeneration issues through a moderated discussion. These conversations revealed the nuances in the interpretation of the PON materials, which are often hidden from an observer. The event was also an opportunity for the local authorities to get more directly involved.

Informed by the insights from the public forum, the UIRS professionals then further analysed the PON materials.²⁰ As already observed in previous scholarly work, one of the limitations of the photovoice is the rather openended interpretation of the materials provided by the participants.²¹ In the case of PON this issue was intentionally addressed when the basic framework was set up, the five thematic categories were defined and the shared values were determined in advance, and the residents had to link them to their submitted materials when uploading photos to PON. There were new lessons learned in this process, as will be discussed further on.

Personal Photostories as a Part of the Emergent Property

The PON database allowed urban designers to get insights into concrete places and their characteristics that mattered to the local residents in

general. The interplay between the visual material and the related, short descriptions was helpful to understand what the respondents wanted to communicate by the selection of a location as well as through the elements shown in the photographs. The first step of the analysis was done within the cluster of the five thematic categories. The images were qualitatively interpreted in terms of 1) mapping which places within the community they showed, 2) what kind of physical infrastructures they addressed, and 3) which activities and users appeared. As the visual scenes on the photos were usually rich in elements and possible interpretations, the captions were used as a support to define the intended meaning that the contributing resident had in mind. In this way, concrete places in the neighbourhood were recognized and the related issues that matter to the residents were listed. This influenced the further programming of participatory urban regeneration activities in the neighbourhood.

An additional layer of information that was embedded in the PON materials contained the tags of shared values, which characterized these places in the opinion of the residents and were attached to the images. The UIRS team analysed the frequency of each value for each of the five thematic categories and thus understood not only which values are the most common in each of the five thematic categories, it also hinted at what matters most in each of the urban regeneration focuses. The frequency of occurrence of certain shared values was also very helpful in the follow-up discussions with residents as a trigger to address shared points of view among them. Thus, in methodological terms, the predefined set of shared values proved to be useful as one of the possible foundations for the photovoice-informed, decision-making process.

Without a doubt, each of the submitted photographs with a caption and a number of tags listing shared values brought very valuable and deeper insights into different levels of urban regeneration considerations. However, some open questions remain.²² One remaining question is central to the everyday practice of participatory urban planning and design. Given that the photovoice only reaches a limited amount of inhabitants in the local population, how, then, can this kind of visual material inform the urban design strategies and concrete approaches in general? Additionally, even if the PON experiment showed the usefulness of the predefined categories as a common ground for evaluating and interpreting the gathered visual material, it still seems that the final interpretation of the (photo)story (with captions) potentially relies as much on the eyes of the 'resident-asphotographer' as on the eyes of the 'urban-designer-as-reader', or any other professional or member of the wider public that interprets it. So how can the contributed photographs with their captions potentially enhance the participatory urban regeneration at the level of a wider community and the city as a whole?

Let us very briefly refer to the conceptual framework of emergent properties at this point. The term is used in both natural and social sciences, where it was defined as one of the causal properties of social structures that appears only at a certain level of complexity and does not pertain to the elements out of which the social structure is composed.²³ Could the understanding of the characteristics of an urban environment through an appropriate amount of visual material with captions and predefined tags provided by residents, potentially become such an emergent property through the further development and general accessibility of digital technologies? This further leads to the question of the complex system, which, according to Herber A. Simon, can be explained as:

... one made up of a large number of parts that interact in a nonsimple way. In such systems, the whole is more than the sum of the parts, not in an ultimate, metaphysical sense, but in the important pragmatic sense that, given the properties of the parts and the laws of their interaction, it is not a trivial matter to infer the properties of the whole.²⁴

81

The previous experiences and the constant development of photovoice approaches, as well as the experience with the PON experiment, indicate that the optimism about making the residents heard in the urban regeneration process has a positive outlook. However, further methodological endeavours through more testing and experimentation without fear of failure must be encouraged.

Concluding Thoughts

The Human Cities initiatives in the Ruski Car neighbourhood illustrate that enhancing participatory urban regeneration tools based on visual material and produced by residents ultimately has the potential to produce a participatory reading of space and consequently influence the whole regeneration process. Such tools reveal the assets of the neighbourhood as seen through the eyes of a resident, or to put it more accurately, they reveal the assets of the neighbourhood as seen through the combined eyes of the residents. However, the question of an emergent property must be addressed instantly whenever such an approach is implemented if the urban regeneration process is to be truly community-centred. The ontological in(ter)dependence of a system's characteristics on individual characteristics may be asserted pragmatically in such cases and may allow for an explanatory independence in which the collective rises above the individual. As mentioned at the beginning of this paper, brownfield redevelopments will be more and more present on urban development agendas in the coming years and many actors will have to be involved in the processes in order to provide the environments that will fulfil the expectations and needs of the many and not just a few. The question of new participatory tools will thus become even more important in the future and approaches based on widely practised techniques such as digital, contemporary photography may gain importance. The methodological and practical issues exposed in this paper will have to be addressed further and many new experimental endeavours and fieldwork will be a welcome testing field

- 1 Matija Bevk et al., *Končno Poročilo Strokovne Žirije za Izbor Plečnikovih Odličij za Leto 2021* (Ljubljana: Društvo arhitektov Ljubljana, 2021).
- 2 Candace IJ. Nykiforuk, Helen Vallianatos and Laura M. Nieuwendyk, 'Photovoice as a Method for Revealing Community Perceptions of the Built and Social Environment', *International Journal of Qualitative Methods* 10/2 (2011), 103-124.
- 3 Mark Deakin, 'A Community-Based Approach to Sustainable Urban Regeneration', Journal of Urban Technology 16/1 (2009), 91-112; Seon Gyeong Baek and Hyun-Ah Kwon, 'Participatory Planning through Flexible Approach: Public Community Facilities in Seoul's Urban Regeneration Project', Sustainability 12/24 (2020), art. 10435; Gunwoo Kim, Galen Newman and Bin Jiang, 'Urban Regeneration: Community Engagement Process for Vacant Land in Declining Cities', Cities 102 (2020), art. 102730.
- 4 Matjaž Uršič, 'Critical Reconsideration of Social and Cultural Elements that Constitute the Creative Ecosystem of a City: Examples from Slovenia and Japan', *Traditiones* 46/1-2 (2017), 149-170.
- 5 Leopoldo Sdino, Paolo Rosasco and Gianpiero Lombardini, 'The Evaluation of Urban Regeneration Processes', in: Stefano Della Torre et al. (eds.), *Regeneration of the Built Environment from a Circular Economy Perspective* (Cham: Springer, 2020), 47-57.
- 6 Antonio Nesticò, Cristina Elia and Vincenzo Naddeo, 'Sustainability of Urban Regeneration Projects: Novel Selection Model Based on Analytic Network Process and Zero-One Goal Programming', *Land Use Policy* 99 (2020), art. 104831.
- 7 Josefine Fokdal et al. (eds.), *Enabling the City: Interdisciplinary and Transdisciplinary Encounters in Research and Practice* (New York: Routledge, 2021).
- 8 Thomas Ermacora et al. (eds.), *Challenging The City Scale: Journeys in People-Centred Design* (Basel: Birkhäuser, 2018).
- 9 Caroline Wang and Mary Burris, 'Photovoice: Concept, Methodology, and Use for Participatory Needs Assessment', *Health Education and Behaviour* 24 (1997), 369-387.
- 10 Helen Close, 'The Use of Photography as a Qualitative Research Tool', Nurse Researcher 15/1 (2007), 27-36; Pennie Foster-Fishman et al., 'Using Methods That Matter: The Impact of Reflection, Dialogue, and Voice', American Journal of Community Psychology 36/3 (2005), 275-291.
- 11 Candace Nykiforuk, Helen Vallianatos and Laura M. Nieuwendyk, 'Photovoice as a Method for Revealing Community Perceptions of the Built and Social Environment', International Journal of Qualitative Methods 10/2 (2011), 103-124.

- 12 Stuart Greene, Kevin J. Burke and Maria K. McKenna, 'A Review of Research Connecting Digital Storytelling, Photovoice, and Civic Engagement', *Review of Educational Research* 88/6 (2018), 844-878.
- 13 Abigail Aboulkacem, Slimane Aboulkacem and Lory E. Haas, 'Photovoice 2.0: A Comprehensive Research Framework for the Digital Generation', *TechTrend* 65/5 (2021), 874-883.
- 14 Lucy Faulkner, Katrina Brown and Tara Quinn, 'Analyzing Community Resilience as an Emergent Property of Dynamic Social-Ecological Systems', *Ecology and Society* 23/1 (2018), art. 24.
- 15 Garett Morgan et al., 'Wellbeing as an Emergent Property of Social Practice', Buildings and Cities 3/1 (2022).
- 16 Matevž Čelik, Ulice in Soseske (Ljubljana: MAO, 2016).
- 17 Matej Nikšič, 'Together on the Platform: Common Action and Reviving the Central Open Public Space in Ruski Car (Russian Tsar) in Ljubljana', in: Josefine Fokdal et al. (eds.), *Enabling the City* (New York: Routledge, 2021), 167-181.
- 18 Matej Nikšič, Biba Tominc and Nina Goršič, 'Revealing Residents' Shared Values through Crowdsourced Photography: Experimental Approach in Participatory Urban Regeneration', Urbani Izziv 29, special issue (2018), 29-42.
- 19 Barbara Goličnik, Matej Nikšič and Lise Coirier (eds.), *Human Cities: Celebrating Public Space* (Brussels: Stichting Kunstboek, 2010).
- 20 Nikšič, Tominc and Goršič, 'Revealing Residents' Shared Values', op cit. (note 18).
- 21 Nykiforuk, Vallianatos and Nieuwendyk, 'Photovoice as a Method', op. cit. (note 2).
- 22 Luc Pauwels, 'Participatory Visual Research Revisited: A Critical-Constructive Assessment of Epistemological, Methodological and Social Activist Tenets', *Ethnography* 16/1 (2013), 95-117.
- 23 Brian Walker and David Salt, Resilience Practice: Building Capacity to Absorb Disturbance and Maintain Function (Washington: Island Press, 2012); Daniel Little, 'Emergence', Understanding Society, https://understandingsociety.blogspot. com/2012/01/emergence.html, accessed 6 October 2022; Dave Elder-Vass, The Causal Power of Social Structures: Emergence, Structure and Agency (Cambridge: Cambridge University Press, 2011).
- 24 Herbert Simon, 'The Architecture of Complexity', *Proceedings of the American Philosophical Society* 106/6 (1962), 467-482: 468.