



Flexible value creation: Conceptual prerequisites and empirical explorations in open workshops



Bastian Lange^{a,*}, Hans-Joachim Bürkner^b

^a University of Leipzig, Institute for Geography, Johannisallee 19a, 04329 Leipzig, Germany

^b Leibniz Institute for Research on Society and Space, Flakenstr. 29-31, 15537 Erkner, Germany

ARTICLE INFO

Keywords:

Open workshops
Digitalization
Flexible value creation
Learning
Trial & error
Assemblage

ABSTRACT

New micro-scale forms of working, ranging between craftsmanship, creative invention and digitalized production, do not only promise to contribute to open innovation (Smith et al., 2017). Open Workshops, FabLabs, Reality Labs, and Tech Shops also provide new modes of value creation (Petschow, 2016). As product development, services and field-specific knowledge become ever more contextualized and contingent, there emerge flexible configurations of value creation (Stabell and Fjeldstad, 1998). Following this line of thinking, we conceptualize the role of Open Workshops in value creation processes. Concerning shifts and fluctuations of the agents involved, may they be professionals, knowledgeable amateurs or everyday practitioners, we know little about the role of space and place for value formation in informal peer networks. We are aiming at shedding light on self-established work structures that are typically experimental and in perpetual transition. Our results demonstrate that value creation is generated on rather unforeseen occasions, based on open search for sufficient work-life balances. Especially digital technologies and their flexible combination with work within self-determined networks and organizations contribute to the emergence of such occasions. The empirical case of Open Workshops illustrates in which ways context-dependent routines of trial & error, latency and flexible processes effect changes in field-specific configuration of value creation.

1. Introduction

Micro-spaces of altered work and production have popped up worldwide in the context of urban, economic and societal transformation. Scholars have so far addressed them as Open Workshops, FabLabs, Urban Laboratories and Coworking Spaces (Herrle et al., 2015; Wolfram and Frantzeskaki, 2016). They have also become recognized by a larger public. One indicator is that calls for the purposeful establishment of Open Workshops in schools and other educational institutions have been made (Assaf, 2014).

In 2016, almost 500 Open Workshops were counted in Germany (Lange et al., 2016), ranging from bike kitchens, FabLabs, printing studios, and other open places engaged in prototyping, crafting and fixing artefacts. Due to an enormous increase of Open Workshops of almost 50% over the last 2 years (Lange et al., 2016), the necessity now arises to conceptualize these Workshops in more detail.

In our understanding, Open Workshops are an important part of the new scenery of open innovation. They comprise craft elements as diverse as highly innovative production technologies, such as prototyping technologies, 3D printing, screen printing, traditional crafts, bicycle

repairing, and others. These phenomena have been considered sites of “collaborative coworking” (Bender, 2013), “alternative economies” (Lange, 2017) or experimental fabbing labs (Fleischmann et al., 2016). They have in common that their internal structures and practices substantially differ from the routines of commercial production.

In the past few years, the academic and policy oriented debate has raised attention on these spaces for various reasons: While some scholars address them as topical niches in the context of sustainability and transformation (Liedtke et al., 2015, 2012; McCormick et al., 2013; Nevens et al., 2013), others have taken a closer look at their role as small breeding places of innovative practices within multi-level governance and urban transition (Gavin et al., 2013; North and Longhurst, 2013; Schirmer, 2010; Seyfang and Haxeltine, 2012). Urban studies scholars have perceived these micro grassroots spaces as a counter movement against the backdrop of financial and austerity effects at the local level (Färber, 2014; Tonkiss, 2013; Vathakou, 2015). Others have started to shed light on collaborative practices within peer production networks (Hemetsberger and Reinhardt, 2009).

An additional strand of conceptualization emerged from studies on shifts in the organization of work, including actual work practices, in

* Corresponding author.

E-mail address: Bastian.Lange@uni-leipzig.de (B. Lange).

contemporary processes of economic transformation. A crucial role for the restructuring of how, when and where people work has been played by the technology-driven deregulation of labour markets (i.e. more self-employment but also new job profiles due to internet and communication technologies; more freelance work) as well as by ICT-induced re-organization of work and workplaces (Kostakis and Bauwens, 2014; Smith et al., 2017).

Although many of these disciplinary approaches comprise very different scopes and topical interests, it is striking that a more comprehensive interdisciplinary conceptualization of the topic is still missing. Labelling prevails over systematic investigation, leaving the issue to metaphoric generalization, such as ‘grassroots’, ‘niche’, ‘space’, ‘lab’, and others. While these notions appear to indicate new urban nuclei of transformation and idiosyncratic social practices, very little information has been provided when it comes to the social configurations which these phenomena imply.

In spite of this void, it is striking that Open Workshops have been intuitively approached as a key component of anticipated macro-scale transformations, e.g. those leading the way to the so-called “green economy”. This has created the paradox that the economic practices and dimensions of Open Workshops are on the one hand extremely underconceptualized and on the other hand overrated and overestimated, especially regarding their potentials for wider economic change. Nevertheless, Open Workshops have been detected as political option creators, mainly by policy makers and intermediaries who strive to take advantage from their implicit and explicit transformative power on neighboring systems. Such endeavors have been represented by recent policy initiatives and model projects funded by national ministries (for Germany, see WBGU, 2016). However, the very basic issue of the economic significance of the phenomena in question has hardly ever been addressed.

Presently there are only few scholars such as Ferdinand et al. (2016), Troxler (2014), Dickel et al. (2014), Fleischmann et al. (2016) and Smith et al. (2016) who point to the transformative power of Open Workshops for the fields of open innovation (Gassmann et al., 2010), or self-organized do-it-yourself practices and amateur craftsmanship (Jabareen, 2014). These scholars have expressed their expectation that the substitution of products and the prolongation of product life-cycles occurring within various types of Open Workshops may have positive effects not only on the valorization of local resources but also on energy sufficiency.

These very selective economic aspects, notwithstanding the interesting bit of the effects of specific socialities on value creation and altered ‘modes of production’, have grossly been missed. Currently there is little systematic academic knowledge available regarding the potential of economic transformation implied by small socio-economic configurations, e.g. as arising from the idiosyncratic social relations they imply or the experimental work relations which transcend traditional logics of sheer profit maximizing (Lange, 2017). Therefore, Open Workshops must be analytically approached from a refined socio-economic understanding of production, regional economies and the logic of value chain production.

2. Research question

More specifically, our paper sheds light on the so far underrated research question of how these Open Workspaces have generated economically relevant effects for the persons involved as well as for the organizational form and the embedding context of these workshops. This does not mean that we will establish a general economic perspective on the phenomenon which will treat social implications as secondary. We rather propose to assemble a refined, sociologically and geographically informed understanding of an economic perspective which takes these bottom-up initiatives as part of the dialectics of evolving capitalism and its social contestation. This involves two major questions:

- (1) In which ways do Open Workshops make an economic end from social drivers of work and material production?
- (2) How do social motivation and relations, craft-oriented expertise and advanced digital technology combine to create economic value?

While undertaking close-up empirical explorations into the ‘becoming’ of bottom-up innovation and value creation, we intend to avoid the fallacies of determinist thinking inherent to grand theoretical approaches such as neo-classical input–output models or the behavioral approach on economic decision-making.

Taking into account recent paradigmatic changes brought by digitization, sinking investment costs for 3D printers, fabbing technologies and their growing integration into educational curricula, we see a strong necessity to reformulate core concepts such as value creation and knowledge formation, including category building regarding skills, social competencies, networks, and spaces.

Accordingly, we argue for an explorative conceptualization based on reconsidering small concepts such as value creation, rather than referring to well-established big concepts such as neoclassical input–output models or innovation models. Lacking a direct clue to social practices which drive the economy such approaches appear to be especially unsuitable for the theoretical and empirical reconstruction of intricate social interaction and discourse as we observe them in Open Workshops, not to mention complicated cross-disciplinary contingencies based on intense intragroup negotiation. For example, the integration of analog and digital tools practiced in bicycle repair kitchens affords particular social embeddings which are not ostensible, such as heterogeneous social competencies and various technical knowledge. The latter often surprisingly combine into applied open source technologies which, in turn, support mobility and wider social practices situated within a local neighbourhood (Jabareen, 2014).

Therefore, we develop a processual and practice-oriented perspective which aims at qualifying the socio-economic terminologies of value creation that are relevant for the conceptualization of social practices driving and organizing these Open Workshops.

Proceeding from first generalizations of the formative trends of Open Workshops, we seek to contribute to the debate on the local potentials and the small-scale economic options for valorization provided by innovative forms of work. We are aware that emerging processes of value creation may afford us to operate with tentative categorical definitions and concepts only. Key concepts such as labor, product, work and value often leave the former grounds provided by economic theory; they might as well be informed by concepts revealing the socio-economic aspects of biography, or the co-creation of material artefacts ‘just for fun’. Shifting contingency of action and the protagonists’ practical venturing out into risk-driven modernities often elapse clear categorization. Nevertheless, their exploration is a necessary step towards reflecting the wider significance of self-organized and experimental types of work, i.e. in terms of their role as emerging components of contemporary economic and societal transformation, and ultimately of the variegations and directions that capitalism enters beyond big-scale formalized production models.

3. Outline of the paper and research interest

Based on these premises, we state that scholars’ awe in face of unprecedented developments and lacking theoretical tools to capture them have recently produced an outright theoretical void. While many empirical explorations into the ‘labs’ scene (Schmidt et al., 2014) have been executed as case- and site-based idiosyncratic studies or have made use of bottom-up ethnography and qualitative methodology (Ouma, 2012), it does not come as a surprise that the degree of generalization of empirical findings is astonishingly low and the few theoretical approaches which might provide a clue to the new phenomena have not even been browsed by interested scholars, not to speak of their

explicit evaluation and recommendation.

The purpose of our paper is therefore, firstly, to discuss the state of the art of the recent conceptual debate. It takes stock of those theoretical elements which decidedly aim at identifying and framing new bottom-up and alternative production modes as part of a refined economic understanding. An initial step will consist of presenting data of how widespread the phenomenon already is in Germany, followed by a more detailed description of the phenomenon and its socio-economic implications.

In doing so, we specifically seek to shed light on its capacities to effect social, economic and political innovation, and to bridge advanced technologies with technology-avoiding social practices that characterize present-day urban everyday life. We also emphasize its potential of generating critical perspectives on continual social change and shifting economic paradigms.

Secondly, we describe the Open Workshop as a distinct type of ‘lab’ which allows for closer inspection of new modes of production, socialization and (urban) place formation. Open Workshops strongly rely on craftsmanship and particular social ambitions; therefore, as a point of departure, we seek to generate provisional understandings of their potential for system change as contained in their local (often ‘down-to-earth’) practices and the alternative projects they entail. This will particularly refer to the delicate and presently under-researched issue of value creation.

Thirdly, we suggest a novel conceptual approach towards emerging processes of value formation and value configuration, plus a theoretical interpretation of Open Workshops in the light of this approach.

Fourthly, we present various empirical context data aiming at a more general understanding of shifting bottom-up relations between production, work and social practice. We introduce typological elements that will prepare a higher level of generalization than has been provided to date by the analysis of overt structural data. Fifthly, we encourage scholars to engage in open theory-building and reorganize in-depth empirical research according to the theoretical demands they might detect.

4. Defining the Open Workshop: a new cooperative model merging work and production?

We define Open Workshops as places where production technologies, fab labs, 3D printing, screen printing, traditional crafts, bicycle repair shops, repair cafés, and others can be tested, used and integrated in the course of prototyping activities (Bürkner and Lange, 2016). Depending on the topical materialities involved, Open Workshops provide the social and intellectual handling necessary to repairing, reassemble or develop prototypes. They imply close connections between technology-related knowledge, materials, manual work and social innovation (Simons et al., 2016; Smith et al., 2017). Heterogeneity prevails, be it in technologies (low tech as well as high tech), materials (e.g. bicycles, clothes or computers), basic competencies (from do-it-yourself ambitions to professional attitudes) or the organization of work (between open collaborative collectives and more formalized small enterprises and start-ups).

Characteristically, due to the lack of scientific clues to such heterogeneity, it has been left to practitioners and their self-organization to provide definitions of the phenomenon. ‘Open Workshops’ has been used by the Germany-based Verbund Offener Werkstätten (VOW, German for “Open Workshops Network”) as a collective term for various publicly accessible repairing, experimenting, and prototyping projects and initiatives. According to the VOW, open workshops are open to all who wish to get involved in independent handicraft activities and do-it-yourself making. Open Workshops are often established by individual initiative but sometimes also by urban cultural, civic or youth centers. Their tight links to local neighborhoods predestines them as new urban nuclei of urban transformation (Herrle et al., 2013). In contrast, private companies seldom serve as initiators of Open

Workshops.

5. Conceptual context addressing Open Workshops

We observe that it is high time to reflect upon the state of the art, as represented by those interdisciplinary approaches which seek to conceptualize alternative production modes. Economic geographers and urban scholars recently spotted an outright bottom-up counter-movement to extensive corporation-led technologization of the industry 4.0 kind. Labelled as Open Workshops (Bürkner and Lange, 2016), FabLabs (Evans and Karvonen, 2014; Schmidt et al., 2014), Real-life-Labs (Liedtke et al., 2015) and Tech Shops (Dickel et al., 2014; Petschow, 2016), they are understood to involve novel models of arranging work and social practice. They also have spatial implications: most of these small bottom-up counter-movements have developed in urban areas which formerly were known as hot spots of the knowledge economy and the creative industries (Färber, 2014; Othengrafen et al., 2016; Vaiou and Kalandides, 2015). Many of them show strong ties to local culture and academic/artistic urban milieus.

Being far from allowing external observers to instantly understand its various concepts or objectives, this vivid scenery nevertheless stimulates academic debates on alternative production models (Ferdinand et al., 2016; Jabareen, 2014). The discursive context ranges from the human geography debate on Green Growth (Fleischmann et al., 2016; Vojnovic, 2014), across economic geography’s debates on Green Economy and post-growth regimes (Schulz and Bailey, 2014) to the interdisciplinary discourse on sustainability (Liedtke et al., 2012; Vojnovic, 2014; Wolfram and Frantzeskaki, 2016). While these debates tend to address new trends in rather abstract ways, the factual varieties of production and work virtually escape their analytical sensorium.

This is surprising since large parts of the discussion, especially on post-growth regimes and alternative production models, have been sustained by scholars who had a keen eye on the empirical phenomena that continually shape urban spaces (Bialski et al., 2015; Chitekwe-Biti et al., 2014; Färber, 2014; Herrle, 2013; Herrle et al., 2015; Jabareen, 2014). To a large extent those phenomena have been stimulated by vernacular activities resulting in “open innovation” (Elmquist and Ollila, 2011; Moilanen, 2012), most of them based on do-it-yourself assembly, repair, tinkering and machine-sharing (e.g. 3d printers) (Iveson, 2013; Jabareen, 2014; Smith et al., 2017).

6. Open Workshops in relation to alternative economic concepts

It is so far unclear if Open Workshops, labs and other socio-spatial configurations can be theorized as phenomena which provide the particular spaces of emerging alternative practices of collaborative production, sharing and consumption, as suggested by Ferdinand et al. (2016) and Liedtke et al. (2015). Theory building has been complicated by the fact that accelerated economic globalization obviously creates a different framing which subordinates local actors under an externally controlled rationale. It mainly operates on the foundations of exclusive innovation, high-tech production and services, virtual and face-to-face networking, implementation of advanced communication technologies, and the proliferation of sophisticated spatial divisions of labor (e.g. global production networks) (Bathelt, 2006; Gereffi et al., 2005).

6.1. Open innovation

An alternative key concept that has stimulated the debate on new socio-economic relations is “open innovation“. Relating to the capacities of a company to regulate the influx and outflux of knowledge, and open its boundaries for external users or innovators, the notion has been used to indicate that recent economic practices based on advanced technology require ‘open access’ and a new, collectively developed understanding of innovation (Chesbrough, 2003; Elmquist and Ollila, 2011). As open source technologies and internet-based social media

facilitate the lowering of transaction costs for the coordination of action and communication, this option has been seized by rising numbers of enterprises. Consequently, cooperation in the form of loose and informal project networks has been facilitated – a development which differs considerably from professional practice within stable hierarchies and price-driven markets (Benkler, 2002; Grabher, 2004). At the same time, new options for the realization of income and reputation have emerged for independent actors. This is particularly true of innovative ideas and ideas developed by outsiders, actors who do not have sufficient institutional embedding (DeFillippi et al., 2007), market rebels and mavericks (Rao, 2009). Especially in the context of open source projects, new coordination and cooperation mechanisms emerge in so-called digital communities which assume the character of organized informality (Dobusch and Quack, 2011).

6.2. Do-it-yourself (DIY)

As yet a mere economic understanding of production still does not fully grasp the approach of Open Workshops. A look at the debate on the roots of the DIY movement (Jabareen, 2014; Müller et al., 2013; Smith et al., 2017) is helpful to better describe one of the ‘other’ principles involved. Present DIY communities and organizations seek to revive a distinct culture of self-expression. The initial idea of self-making had been imagined as a way of making a gift to others that had not been conventionalized or imbued with the significants of industrial production. It related to the idea of strengthening original practices of bottom-up empowerment, e.g. the self-empowerment of individuals and groups. Originally a term used in debates about independent music and media culture (cf. McKay, 1998), it has been introduced to the labs debate to describe the social nature of digitization as being fundamentally networked. Moreover, it has been taken as a possible determinant of the ecological, social and economic potentials of sustainability.

The novelty of the current socio-economic DIY movement, which in fact includes numerous Open Workshops, derives from the notion and the various concepts of self-making. Via the Internet, makers are now integrated into worldwide networks and can exchange information about their current projects in real time. This not only makes the DIY culture potentially better visible. It may also spread the idea of self-invented and self-organized work further, making it accessible to more and more diverse agents, thus rendering it ever more complex.

Resuming the discussion on the two key concepts of open innovation and DIY, it can be said that there are still conceptual black boxes, mainly regarding the understanding of how protagonists get involved and how they perceive practices of ‘doing something’. This gap has to be well considered when defining and describing the workings of Open Workshops. Future theoretical and empirical work must focus on the ways in which the actors involved speak about a relevant process, product, or service. Do they relate these items to innovation in the first place or to their intention to ‘do things by ourselves’? Is innovation a side-product of DIY, and if so, shall it be pursued or even promoted? How do innovation and possible value creation relate to protagonists’ intrinsic motivation and the social conventions of community-based action?

7. Value creation in Open Workshops: an elusive phenomenon?

To get close insight into the ways in which value is created in Open Workshops, we had to develop a context-specific notion of value creation. We conceptualized it as a matter of shifting configurations of actors and material elements rather than fixed strings or lines of economic transaction (Stabell and Fjeldstad, 1998). This understanding is similar to value creation in many neighbouring fields of the creative industries, e.g. scene-based music production (Lange and Bürkner, 2013). Configurations of value creation can be theorized in various ways:

One way has been provided by the concept of value shops, where

more or less fixed types of agents (producers, customers) negotiate the quality and value of a product or service before working on it (Gottschalk, 2007). This approach emphasizes the interactive element in the planning and manufacturing of a particular product, but it lacks a deeper understanding of open interaction and the social dynamism that is typical of Open Workshops. Rather, it is confined to stereotypical concepts of economic actors which do not sufficiently account for variations in their roles and motivations. In this perspective, formal market relations inform the concept of actors and activities relevant for value creation.

Similar formalism can be found in the concept of the value network which also focuses on market relations but concedes to the customer a more active, i.e. negotiating role. This does not only apply to traditionally institutionalized instances of ‘selling and buying’ but also to more open negotiations about the quality of a product via social media and product-oriented Internet forums. Again, the variability of internal interaction and open access, which is so typical of open labs and workshops, can only marginally be grasped.

More flexibility and free interaction has been attributed to processes of prosuming where (former) customers begin to change roles and become producers on their own. The prosumer model refers to shifting roles performed by one and the same agent. The hybrid ideal type of the prosumer flexibly combines the functions of a consumer and a producer, often in a formal market relation (Ritzer and Jurgenson, 2010). Examples of DIY small-scale music production, e.g. in the field of digital home recording, show that it is difficult to identify any standard pattern of generating monetary returns from amateurish or professional activities (Winter, 2012). Many products are offered for free or small amounts of money where the notion of ‘market’ in a traditional economic sense is hardly applicable. Rather, large shares of this phenomenon are symbolic; they indicate a ‘market of awareness’ on the side of prosumers which returns vague promises of their future gain in reputation or occasional economic impact.

8. Conceptual meso-categorical elements: flexible configurations, trial and error, and latency

Closer to the reality of Open Workshops is the concept of flexible configurations of value creation (Stabell and Fjeldstad, 1998). Such configurations develop according to encounters of actors interested in producing. These encounters are mostly backed by social scenes or milieus that stimulate production and serve as clients at the same time. Empirical evidence from such configurations in scene-based music production demonstrates that there is an interrelation of cultural and economic value (Lange and Bürkner, 2010). Non-material, in particular non-monetary, value is an important prerequisite for economic value creation. Not only the peculiarities of the agents involved but also changing cultural values have an impact on the times, the places, the products and the range of economic value. This combination of various elements, however, cannot be grasped by a single model. Since personal relationships and changing contexts affect the types and points of economic value creation, it is important to trace the motivations, uses of tools and technologies, social purposes and the evolution of networks of producers/consumers that contribute to the making of a product.

One major prerequisite of such configurations of value creation is the principle of trial and error (Bürkner, 2013, 2016). It does not only apply to the search for new ideas, artefacts, products, modes of collaboration, combinations of heterogeneous activities, new sources of income etc., but also to the practical handling of latency. Trying something out and repeatedly discarding it means that material and immaterial resources may be wasted, that many ideas do not become realized, and that many options never find their way into valorization. Latency thus is a main pillar of flexible value creation, more so than in standardized value creation occurring along pre-defined industrial value chains, including rationales of efficiency and profit maximization.

Trial & error involves the habit of making use of everything that is

within reach, as it has been practiced in independent music production under the impression of digitalized production and Internet distribution (Bürkner, 2016; Tschmuck, 2013). Such a ‘360 degree’ utilization of options might temporarily reduce latency, but in practice it is usually reduced to a smaller number of realized options, putting remaining alternatives on standby (Bürkner, 2016; Tschmuck, 2013).

To a certain extent, such altered modes of value creation also mirror openness as a guiding principle of post-growth ways of working. What had originally been claimed for industries under technological pressure, i.e. open innovation and a less restricted interaction of an enterprise with its environment (Lampel, 2011), now extends to other types of work as well. Open access to knowledge, technologies, tools, and resources characterizes much of the Open Workshop scenery, yet with one major difference: it comes in not by economic pressure or design but in the first place by a social logic of sufficiency (Petschow, 2016). This includes the deliberate choice of activities, aims and procedures according to context-dependent needs and preferences. To the agents involved, one and the same activity established within one social context may appear as having a potential of being economically useful but might well be declared non-economic within another context.

9. Contrasting examples of value creation in Open Workshops – methodology and survey results

According to the dynamics described above, Open Workshops have to be addressed as multi-layered places which embody various promises of sustainability and innovation. Therefore, on the one hand, it is necessary to examine the workings of such social places within open networks of producers and the associated function of these places for open innovation processes, involving institutions, civil society, small and medium-sized enterprises, as well as large informal groups. On the other hand, there is need for a focus on the momentum of collective socio-economic transformation that Open Workshops generate as a whole by producing variations of ‘free form’ innovation.

10. Data sample “Open Workshops”

Based on an empirical survey of Open Workshops in the summer of 2015, we focused on open innovation processes and traced their social, material and economic impact. For the online survey, a full-census data sample “Open Workshops” was set up from April to June 2015 in the entire federal territory, comprising 453 addresses. Sampling criteria included the three factors condensed from the definition approaches: openness, the sharing of infrastructure and the execution of material processing. A questionnaire with 76 questions allowed for a structural description of open workshops, their networks and processes. The survey was divided into the four dimensions of values and value-added, biographical embedding, technology and community (Lange et al., 2016). Data collection took place in a self-esteeming and deputy manner, one person each representing one open workshop. The decision about who would take this position was left to group-internal negotiation processes.

11. Scope and structure of Open Workshops in Germany: empirical insights

Of the 453 Open Workshops invited by mail, more than 200 respondents completed the questionnaire by September 2015.¹ Overall

¹ The question of how and where value creation has been introduced as a purpose and an organizing principle of Open Workshops will be tackled in the following based on a recent survey of Open Workshops in Germany made in 2015 in the course of a combined research/governance project (COWERK), funded by the Federal Ministry of Education and Research (see www.cowerk.org, ID: 01UT1401). A full census of 469 Open Workshops was taken, rendering a response rate of 22 %. This representative survey can be rated as delivering a well-founded picture of the present situation of Open Workshops

the survey with its high return rate of 23% allows for generalized assumptions about the totality of open workshops in Germany and can be regarded as representative (cf. Miles and Huberman, 1994).

Respondents took an average of 50 min to answer the survey. On this basis, comprehensive and differentiated insights into the landscape of open workshops were generated. Additionally, a number of 25 key protagonists and organizers were chosen for qualitative interviews (Lange et al., 2016, 26 ff). These interviews revealed narratives that we addressed as “first order concepts” developed by agents in the field (Miles and Huberman, 1994). Analysis of first order concepts laid the foundation for generalized “second order” concepts gained by comparative analytical reconstruction.

Formally speaking, 41% of the 469 Open Workshops surveyed had the legal status of registered associations, while 33% had been explicitly founded as informal coalitions of independent actors. The number of those persons actively involved in Open Workshops on a regular basis or over a longer time span varies from one to 60. The share of women in inner circles of key actors or wider circles of occasional participants amounts to 30%. The average age is 37, with a concentration in the age groups of 25–30, 40–45, and 60 and beyond.

The distribution of professional qualification among respondents shows a clear preponderance of natural sciences and technological studies, followed by the humanities and economics (mostly university degrees), as well as media and arts. Considering these levels of education, the low net income per month of 1,550 Euros is surprising. The generally unfavorable income situation is additionally aggravated by the financial burden that must be shouldered by the interviews when participating in an Open Workshop. While a lower share of the materials used in the workshops has been brought in by collecting (9%) and donations (26%), most materials had to be newly bought (46%). According to the generally low amount of money that could be raised for the maintenance of Open Workshops, the average value of equipment was 5,000 Euros.

Regarding the motivation of practitioners of Open Workshops, our survey data (see Lange et al., 2016, 29 ff) has shown that the main motive of joining and using an Open Workshop is for learning how to ‘do things’, doing practical work, doing things collectively and contributing to social transformation.

87% of all respondents considered knowledge transfer as very important, so that this can be regarded as a central motive. It indicates the high degree of internal collaboration in education and knowledge matters, which in turn renders Open Workshops as important networks operating at random within self-organized educational landscapes. Open workshops can thus be described as experimental areas which often attract people of various academic background during biographical phases of (re-)orientation. It provides space for working together in a practical way without much preparation, enabling individuals to explore alternatives to formalized work. Participants can easily get involved in the mutual exchange of different stocks of knowledge. Being asked what they consider as added value for themselves, respondents rated learning and becoming experienced relatively high. In contrast they hardly understood their participation in Open Workshops as a contribution to their livelihood, let alone an economic profit.

The particular arrangement of work occasions offered by Open Workshops obviously appeals to clearly describable groups of users. 43% of those respondents who were experienced in using tools or processing materials can be addressed as members of a core interest group. However there is no explicit offering strategy pursued by the Workshops. 37% of the Open Workshops surveyed simply addressed everyone who had a general interest in participating; another 12%

(footnote continued)

in Germany. Additionally, 25 qualitative interviews with key protagonists and organizers of Open Workshops were made.

made their offers especially for the local population living in the vicinity.

12. Ways of structuring Open Workshops

Based on our qualitative stakeholder interviews, we will now take a closer look at relevant first order concepts that reflect procedures, activities and processes of structuring which take place in open workshops and their networks. It is only by reflecting upon the total array of activities that value creation can be analytically reconstructed as a socially embedded phenomenon. Since it is not the initial or main purpose of any Open Workshop to make profit or provide an opportunity for making a living, the significance of value creation emerges as if on the fly. It depends on the social relations established (including power relations), the technologies involved, the ideological conventions made, the individual commitments achieved, and the specificity of given materials, if value creation is implemented or not. The first order concepts presented in the following reflect the frame of reasoning established by the agents in the field. They provide an authentic impression of the relevance and the nature of value creation that had evolved.

13. Flexible configurations of value creation

The qualitative data reveal that the individual Open Workshop combines alternative options for the invention of products, competing ideas for the processing of materials, routine procedures emerging by contingency, experimental practices, search processes and the open passing-on of knowledge. The outcomes of these individual concepts and actions are often hard to predict. This has immediate consequences for the economics of such socio-material arrangements. The occasions, phases and locations of value creation are very often not determined in advance, and neither are the properties of the eventual products or services.

They are developed and temporarily fixed as part of ongoing learning processes. ‘Trial and error’ plays an important part in this flux of ‘coming-into-being’. Depending on the nature of activities (ranging between purposeless experimenting with raw materials and the purposeful filling of economic gaps and niches that are not touched upon by mainstream economies), ideas and plans for generating value tend to come up by accident. However, this does not mean that contingency rests upon arbitrariness: learning how to find one’s way through a labyrinth of shifting values, procedures, aspirations and options for personal collaboration always implies a rough idea of where to go, even if the details of the way are still obscure.

This is especially true for repair workshops or early stages of resolving technical problems by just doing. Finding out about the specificities of materials, technical construction plans, ways to handle things, etc., not only involves high amounts of experimenting but also relegates economic value creation to the status of a by-product of hedonistically or interactively initiated activities. “Knowledge and education and fun for everyone!”, this is how one participant in an Open Workshop describes its grassroots rationale. Nevertheless, the protagonists do not understand such mottos as a universal code of conduct but rather as an invitation to engage in various attempts to try something out. They feel encouraged to develop new intentions according to the experiences they have, and stick to individualized micro-strategies instead of contributing to a strategic whole.

14. Trial and error in Open Workshops

A contrasting case is the high-tech driven exploration of technical, procedural and economic opportunities to resolve economic problems, mostly based on social conventions. This case is represented by Open Workshops engaged in 3D printing and the development of sought-after yet seldom produced micro products. Here the clue to economic value

creation is obvious, as market demand may inspire product refinement as well as enhanced distribution, be it via Internet-based social networks or word-of-mouth advertising at the level of local neighborhoods. Again, trial-and-error activities guide the way through options and decisions, in this case closer related to the question of how much money should be made according to collective norms and cultural values: What is good or bad in terms of a basic ideology such as sustainability or sufficiency?. It is here that professionalization and relations to commercial enterprises may come up as a legitimate, though not necessarily mandatory option.

All in all, our empirical data render value creation as being primarily driven by a social logic which oscillates between non-targeted trying-things-out, serving pre-conceived social goals (such as the realization of self-determined, exploitation-free work), the possibility of yielding economic benefits at free will, or the necessity of generating income. The places and objects of value creation (products and/or services) are defined only according to the situational circumstances that arise from the way in which the assemblage of the Open Workshop changes.

15. Latency as a subtle structuring principle of value creation

Thus, the Open Workshop as a principle of structuring informal networks is more, can be more and ‘wants’ to be more than its concrete manifestation (e.g. a place for repairing a bike) might suggest. This is where its actual creative potential lies. It is safeguarded by the fact that the processes, activities and ideas generated are not immediately under pressure to become economically valuable. Instead, they are allowed to live (at least to a certain extent) a life of their own, driven by a spirit of non-intentionality and curiosity, but also by a cautious perspective towards the possible future usefulness of solutions and products. This context provides high levels of latency, which in turn tend to retard upcoming decisions about which direction to take towards subsequent economic activities. However, latency might also be an element of surprise, since it has the power to make those economically reasonable solutions obvious which might not have been debatable in other situations before. Such situated initialization of value creation, rather than preconceived points of economic intervention, characterizes the particular effects of latency. The fact that informal relationships and open access of participants support latency building and the emergence of unpredictable points of intervention – which in itself can be very inspiring – helps to generate a lasting atmosphere of creativity.

Latency can thus be conceptualized as the prime mover behind the emergence of social and economic opportunities alike. Within the situational context of Open Workshops, it is nourished by a well of ideas, knowledge, materials and other elements in a manner that is only feebly structured. From an external perspective, this might be described as an open arrangement; paradoxically, from the inside (i.e. from the perspective of participating ‘makers’ and observers) it has only occasionally been recognized as such.

Social processes leading to trial/error and latency often involve the formation of communicational asymmetries and contestation. For instance, certain forms of work, and also events (e.g. open conferences), can be purposefully used to generate latency. Here, intentions and project plans can be advanced, norms can be formulated (e.g. regarding the deceleration of work routines or the need to practice open learning), and self-reflecting, sometimes even antipoeitical, routines can be practiced. However, not everyone involved is able or willing to engage with something like that. As time passes, different degrees of willingness and varying modes of factual participation generate selective processes of closure. Often actors subtly negotiate their self-positioning and the way they become positioned by others; this contributes to the formation of core groups and internal elites. Negotiations and selection criteria may develop similar to everyday social habits, but in contrast they directly refer to the materiality of making and producing. Hence the decision to engage in economic value creation might also be a matter of

reputational hierarchies and of the position acquired by those who are attributed the right or competency to take initiative.

16. Conclusions

By this paper we seek to answer some important questions about the significance of value creation for the practices of work that are typical of Open Workshops. Referring to recent contributions (Nevens et al., 2013; Smith et al., 2016), we think that our findings provide relevant answers in two differentiated ways.

For one, practices of exploring materials, tinkering, repairing, combining autodidactic learning about technologies and craftsmanship, and doing socially valuable work – they all have an economic edge, though in many cases a latent one. It becomes visible only on a limited number of occasions, for example when new artefacts are produced. Such artefacts emerge from a combination of (1) social imagination, (2) amateur technical proficiency and (3) professional knowledge of ‘how to do things’. Value creation begins as soon as agents reflect upon the factual and potential demand for the objects and ideas that have been developed by such heterogeneous work; however, this does not happen in a predictable or reliable way. Our findings show that it depends on the nature of social relationships, collective peer network attitudes and lifestyle-bred preferences if someone develops an idea about valuing and monetarizing work and products or if he/she deems it irrelevant, or even unwelcome, for the community he/she is part of. Consequently, the prevailing indeterminacy has at least two effects which shape the Open Workshop into a self-contained assemblage: First, changing instances and ways of valuation tend to make Open Workshops ‘incompatible’ to markets in a way; they appear as incalculable for politicians, private enterprises and intermediaries because these agents approach the phenomenon on the basis of relatively fixed social and economic expectations. Second, indeterminacy is continually preserved and reproduced because for the users of Open Workshops it is a means to enhance the structural autonomy of ‘doing’ and ‘making’ things beyond rigid routines or plans. This tacit quest for the unusual is vital for them because it enhances their self-esteem. It also explains why these actors repeatedly feel the need to regain skills to repair, fix, develop prototypes and engage in experiments, even if well-established models or industrial intermediate products are at hand.

For another, however, the issue of value creation still becomes palpable, despite the general indeterminacy and unpredictability of emerging social and economic structures. Hence our conceptual approach to value creation emphasizes the seminal stages of trial and error, latency building and flexibility of exploration. Its processual perspective allows for conceptualizing value creation from its tacit beginnings, as part of purposeless, sometimes naïve, ‘doing’, with experimental spots of collective work and mutual discovery generating space for expansion. It supports the idea that incremental learning, experience and occasional impulse for extending work on materials into the market foster the creation of cultural value and of a sense of economic value which might be realized on some occasion. As our findings show, trial and error nevertheless come along with high shares of latency. The mere fact that there is economic potential to an idea does not mean that agents necessarily develop this potential further.

Once an evolving configuration of value creation (according to Stabell and Fjeldstad, 1998) has raised focal ideas and the material side of production above the level of indeterminacy, thereby reducing latency, the state of economic innocence is often left. Due to an ongoing interest in developing Open Workshops, agents operating within these places are confronted with, and get involved in, professionalization, purposeful calculation, and monetarization of their work and products. Our qualitative findings show that this is when they start to think strategically, if only for the purpose of occupying an economic niche or providing a socio-economic structure which offers services or products that do not have any significance for commercial markets.

With regard to the structural side of things, Open Workshops

acquire hybrid qualities (Schmidt et al., 2014): On the one hand, labs provide social routines of peer networking and community building, pre-professional experimenting with materials, and accidental definition of the purpose of work. On the other hand, similar to the findings of Smith et al. (2017), they are situated on the brink of professionalism and economic exploitation of work. This Janus-faced quality can be grasped – and respected! – by the approach of flexible value creation, leaving the question of whether labs belong to capitalism or not untouched for the time being.

To conclude, almost three quarters of the investigated Open Workshops are non-commercial, do-it-yourself types of labs. They defer the option of creating economic value, e.g. as a retreat in case other options of social protection (social aid, external income, voluntary work) cannot be activated to guarantee the survival of the workshop. One quarter of the analyzed Open Workshops come closer to organizational structures and types of work known from mainstream industrial economies. They would find it easier to generate scopes of action necessary for selectively implementing original forms of monetary value creation. In doing so, they nevertheless enable their participants to engage in trial-and-error and open learning without immediately being restricted by economic constraints. It is this balance of socially motivated deliberateness, backup by a local community of peers, and playful exploration of economic options that sets them apart from more formalized types of mainstream collaborative production, communities of practice, or forms of prosuming that are established by private enterprises for their immediate economic benefit. While such economic projects reduce the range of experimenting and learning, Open Workshops on the contrary seek to enhance it. They create settings or assemblages of agents, infrastructures, technologies, materials and ideas that foster trial-and-error routines and encourage their participants to rely on their own capacities. In sum, the embeddedness of value creation in latency and idiosyncratic social relations tends to guarantee the continual regeneration of a creative capacity that is needed to make Open Workshops sustainable, socially rewarding and capable of further economic development – if so desired.

When observed from this theoretical perspective, Open Workshops and other types of labs entail a couple of subsequent questions regarding their innovative capacities and potentials for systemic and institutional change (North and Longhurst, 2013). They also raise the question of what type of post-industrial production might be created by their proliferation. We are aware that within the scope of this paper it will not be possible to discuss these delicate questions in sufficient detail but would nevertheless like to encourage scholars to focus on the wider societal implications of the evolution of these new social spaces. In particular, we invite them to find answers to the following questions:

- (1) Do Open Workshops represent a type of innovation that has the potential of revolutionizing our ways of ‘doing economy’ and positioning work in social life?
- (2) How new are open innovation and the labs idea actually? Do not they imitate former hypes of alternative economies that from the 1960s on kept emphasizing community-based or non-commodified work, social experimentation, DIY routines of production, autonomy and the sustaining of economic niches such as the ecological food sector (see the overview given in Parker et al., 2014)?
- (3) Do they come close to what Bailey, Schulz and others (Bailey and Caprotti, 2014; Schulz and Bailey, 2014) described as post-growth economy, i.e. an idea that implies the fundamental revision of capitalism of the type we have come to know in the past? Might they even represent the practical quest for post-capitalist modes of production and open experiments in favor of ontological reframing, including new economic ethics, claimed for by authors such as Gibson-Graham (Gibson-Graham, 2008; Gibson-Graham and Roelvink, 2010)? Or do they rather remain ‘on this side’ of profit-oriented capitalism, adding to it a special flavor of unexpected regeneration?

These questions are especially intriguing because Open Workshops by themselves give practically no overt hints at how they might become positioned within an economic world that virtually does not allow anyone to stay outside ‘the market’. Contemporary practices revealed by Open Workshops point at paradoxical dynamics of systemic inclusion and exclusion of those involved in open experiments. They are informed by a peculiar combination of idealism and pragmatism which does not simply represent new economic ethics in the making (cf. (Gibson-Graham and Roelvink, 2010) or post-growth transition of the ‘green economy’ type (Schulz and Bailey, 2014). There is more complexity involved. While alternative world views, such as those provided by political ecology and movements pro social justice, inspire the search for alternative types of work, new pragmatism seems to reconcile this orientation with options for selectively making money or running a business. New balances between the need for income generation and social experiment may not necessarily be precarious but might also give birth to new ways of life (Sennett, 2012). Flexible value creation, interspersed in continually evolving models of paid and non-paid work, may point the way.

References

- Assaf, D., 2014. Maker Spaces in Schulen: Ein Raum für Innovation (Hands-on Session). In: Rummler, K. (Ed.), *Lernräume gestalten – Bildungskontexte vielfältig denken*, Münster, pp. 141–149.
- Bailey, I., Caprotti, F., 2014. The green economy: functional domains and theoretical directions of enquiry. *Environ. Plan. A* 46. <http://dx.doi.org/10.1068/a130102p>.
- Bathelt, H., 2006. Geographies of production: growth regimes in spatial perspective 3 – toward a relational view of economic action and policy. *Prog. Hum. Geogr.* 30 (2), 223–236.
- Bender, D., 2013. Mobile Arbeitsplätze als kreative Räume. Coworking Spaces, Cafés und andere urbane Arbeitsorte. Transcript, Bielefeld.
- Benkler, Y., 2002. Coase’s Penguin, or, Linux and The Nature of the Firm. *The Yale Law Journal* 112 (3), 369–446.
- Bialski, P., Derwanz, H., Otto, B., Vollmer, H., 2015. ‘Saving’ the city: Collective low-budget organizing and urban practice. *ephemera* 15(1), MayFlyBooks. *ephemera* 15 (1), MayFlyBooks.
- Bürkner, H.-J., 2013. Trackproduktion als Trial and error? Wertschöpfungsvarianten in der elektronischen Clubmusikproduktion zwischen Digitalisierung, Internet und lokalen Szenen. In: Lange, B., Bürkner, H.-J., Schüßler, E. (Eds.), *Akustisches Kapital. Wertschöpfung in der Musikwirtschaft. (Kultur- und Medientheorie)*. Transcript, Bielefeld, pp. 45–98.
- Bürkner, H.-J., 2016. Exploring the ‘360 Degree’ Blur: Digitization, Sonic Capital and the Strategic Orientations of Electronic Indie Labels. In: Hracs, B., Seman, M., Virani, T. (Eds.), *The Production and Consumption of Music in the Digital Age*. Routledge (Routledge Studies in Human Geography), London, New York, pp. 161–176.
- Bürkner, H.-J., Lange, B., 2016. Configurations of Value Creation in Open Workshop, in: Wulfsburg, J., Tobias, R., Moritz, M. (Eds.), *Zukunft der Wertschöpfung [The Future of Value Creation] (Proceedings of the first interdisciplinary conference on the future of value creation, Hamburg. ISBN: 978-3-86818-092-3)*, Hamburg, pp. 307–316.
- Chesbrough, H.W., 2003. *Open Innovation: The new imperative for creating and profiting from technology*. Harvard Business School Press, Boston.
- Chitekwe-Biti, B., Patel, S., Midlin, D., 2014. The transnational experience of community-led development. In: Bredenoord, J., van Lindert, P., Smets, P. (Eds.), *Affordable Housing in the Urban Global South: Seeking Sustainable Solutions*. Routledge, London, New York.
- DeFillippi, R., Grabher, G., Jones, C., 2007. Introduction to paradoxes of creativity: managerial and organizational challenges in the cultural economy. *J. Organ. Behav.* 28 (5), 511–521.
- Dickel, S., Ferdinand, J.-P., Petschow, U., 2014. Shared Machine Shops as Real-life Laboratories. *Journal of Peer Production* 5 (<http://peerproduction.net/issues/issue-5-shared-machine-shops/peer-reviewed-articles/shared-machine-shops-as-real-life-laboratories/>), (accessed 13 June, 2016).
- Dobusch, L., Quack, S., 2011. Interorganisationale Netzwerke und digitale Gemeinschaften: Von Beiträgen zu Beteiligung? *Managementforschung* 21, 171–213.
- Elmqvist, M., Ollila, S., 2011. Managing open innovation: exploring challenges at the interfaces of an open innovation arena. *J. Creat. Innov. Manage.* 4 (20), 273–283.
- Evans, J., Karvonen, A., 2014. ‘Give me a laboratory and i will lower your carbon footprint!’ — urban laboratories and the governance of low-carbon futures. *Int. J. Urban Reg. Res.* 38 (2), 413–430.
- Färber, A., 2014. *Low-budget Berlin: Towards an understanding of low-budget urbanity as assemblage*. Cambridge J. Reg., Econ. Soc. 7 (1), 119–136.
- Ferdinand, J.-P., Petschow, U., Dickel, S., 2016. *The Decentralized and Networked Future of Value Creation. 3D Printing and its Implications for Society, Industry, and Sustainable Development*. Springer, Wiesbaden.
- Fleischmann, K., Hielscher, S., Merritt, T., 2016. Making things in fab labs: a case study on sustainability and co-creation. *Digital Creat.* 27 (2), 113–131.
- Gassmann, O., Enkel, E., Chesbrough, H., 2010. The future of open innovation. *R&D Manage.* 40 (3), 213–221.
- Gavin, B., Bouzarovski, S., Bradshaw, M., Eyre, N., 2013. Geographies of energy transition: space, place and the low-carbon economy. *Energy Policy* 53 (331–340).
- Gereffi, C., Humphrey, J., Sturgeon, T., 2005. The governance of global value chains. *Rev. Int. Polit. Econ.* 12 (1), 78–104.
- Gibson-Graham, J.K., 2008. Diverse economies: performative practices for ‘other worlds’. *Prog. Hum. Geogr.* 32 (5), 613–632.
- Gibson-Graham, J.K., Roelvink, G., 2010. An economic ethics for the anthropocene. *Antipode* 41, 320–346.
- Gottschalk, P., 2007. *Knowledge management systems: Value shop creation*. Idea Group Publications, Hershey, PA.
- Grabher, G., 2004. The markets are back!. *Prog. Human Geograp.* 28 (4), 421–424.
- Hemetsberger, A., Reinhardt, C., 2009. Collective development in open-source communities: an activity theoretical perspective on successful online collaboration. *Organ. Stud.* 30 (09), 987–1008.
- Herrle, P., Fokdal, J., Ley, A., 2015. Transnational networks of urban poor: key for a more collaborative urban governance? In: Herrle, P., Fokdal, J., Ley, A. (Eds.), *From Local Action to Global Networks: Housing the Urban Poor*. Routledge, London, New York, pp. 195–202.
- Herrle, P., Fokdal, J., Ley, A., 2013. New urban players in Africa and Asia: the role of grassroots organizations. In: Töpfer, K., Mieg, H.A. (Eds.), *Institutional and Social Innovation for Sustainable Urban Development*. Routledge, London, New York, pp. 146–161.
- Iveson, K., 2013. Cities within the city: do-it-yourself urbanism and the right to the city. *Int. J. Urban Reg. Res.* 37 (3), 941–956.
- Jabareen, Y., 2014. “Do it yourself” as an informal mode of space production: conceptualizing informality. *J. Urbanism: Int. Res. Placemak. Urban Sustain.* 7 (4), 414–428.
- Kostakis, V., Bauwens, M., 2014. *Network Society and Future Scenarios for a Collaborative Economy*. Palgrave Macmillan, London.
- Lampel, J., 2011. Converting Values into Other Values: Fairs and Festivals as Resource Valuation and Trading Events. In: Moeran, B., Strandgaard Pedersen, J. (Eds.), *Negotiating Values in the Creative Industries: Fairs, Festivals and Competitive Events*. Cambridge University Press, Cambridge, pp. 334–345.
- Lange, B., Bürkner, H.-J., 2010. Wertschöpfungen in der Kreativwirtschaft: Der Fall der elektronischen Clubmusik. *Zeitschrift für Wirtschaftsgeographie* 54 Jg. (1), 46–68.
- Lange, B., Bürkner, H.-J., 2013. Value-creation in the creative economy – the case of electronic club music in Germany. *Econ. Geograp.* 82 (2), 149–169.
- Lange, B., Domann, V., Haefele, V., 2016. Wertschöpfung in offenen Werkstätten. Eine empirische Erhebung kollaborativer Praktiken in Deutschland. Institut für ökologische Wirtschaftsforschung.
- Lange, B., 2017. Offene Werkstätten und Postwachstumsökonomien: kollaborative Orte als Wegbereiter transformativer Wirtschaftsentwicklungen? *Zeitschrift für Wirtschaftsgeographie* 61 (1), 38–55.
- Liedtke, C., Baedeker, C., Hasselkuß, M., Rohn, H., Grinewitschus, V., 2015. User-integrated innovation in Sustainable LivingLabs: an experimental infrastructure for researching and developing sustainable product service systems. *J. Cleaner Prod.* 97, 106–116.
- Liedtke, C., Jolanta Welfens, M., Rohn, H., Nordmann, J., 2012. LIVING LAB: user-driven innovation for sustainability. *Int. J. Sustain. High. Educ.* 13 (2), 106–118.
- McCormick, K., Anderberg, S., Coenen, L., Neij, L., 2013. Advancing sustainable urban transformation. *J. Cleaner Prod.* 50, 1–11.
- McKay, G., 1998. *DIY culture. Party & Protest in Nineties Britain*. Verso, London, New York.
- Miles, M.B., Huberman, A.M., 1994. *Qualitative data analysis: An expanded sourcebook*. Sage Publications, Thousand Oaks.
- Moilanen, J., 2012. Emerging hackerspaces–Peer-production generation, in: I., H., B., L., T., M., W., S. (Eds.), *Open Source Systems: Long-Term Sustainability. OSS 2012. IFIP Advances in Information and Communication Technology, vol 378*. Springer, Berlin, Heidelberg, pp. 94–111.
- Müller, C., Baier, A., Werner, K., 2013. *Stadt der Commonisten. Neue urbane Räume des Do it yourself*. Transcript, Bielefeld.
- Nevens, F., Frantzeskaki, N., Gorissen, L., Loorbach, D., 2013. Urban Transition Labs: co-creating transformative action for sustainable cities. *J. Cleaner Prod.* 50, 111–122.
- North, P., Longhurst, N., 2013. Grassroots localisation? The scalar potential of and limits of the “Transition” approach to climate change and resource constraint. *Urban Stud.* 50, 1423–1438.
- Othengrafen, F., Romero Renau, L., Kokkali, I., 2016. A new landscape of urban social movements. Reflections on urban unrest in Southern European cities. In: Knieling, J., Othengrafen, F. (Eds.), *Cities in Crisis. Socio-spatial impacts of the economic crisis in southern european cities*. Routledge, New York, pp. 139–154.
- Ouma, S., 2012. “Markets in the Making”: Zur Ethnographie alltäglicher Marktstrukturen in organisationalen Settings. *Geographica Helvetica* 67, 203–211.
- Parker, M., Cheney, G., Fournier, V., Land, C., 2014. *The Routledge companion to alternative organization*. Routledge (Routledge companions in business, management and accounting), London.
- Petschow, U., 2016. How Decentralized Technologies Can Enable Commons-Based and Sustainable Futures for Value Creation. In: Ferdinand, J.-P., Petschow, U., Dickel, S. (Eds.), *The Decentralized and Networked Future of Value Creation*. Springer, Wiesbaden, pp. 237–255.
- Rao, H., 2009. *Market Rebels: How Activists Make or Break Radical Innovations*. Princeton University Press, Princeton and Oxford.
- Ritzer, G., Jurgenson, N., 2010. Production, consumption, prosumption: the nature of capitalism in the age of the digital ‘prosumer’. *J. Consum. Cult.* 10 (1), 13–36.
- Schirmer, J., 2010. Scaling up: assessing social impacts at the macro-scale. *Environ. Impact Assess. Rev.* 31, 382–391.

- Schmidt, S., Brinks, V., Brinkhoff, S., 2014. Innovation and creativity labs in Berlin – organizing temporary spatial configurations for innovations. *Zeitschrift für Wirtschaftsgeographie* 58 (4), 232–247.
- Schulz, C., Bailey, I., 2014. The green economy and post-growth regimes: opportunities and challenges for economic geography. *Geograska Annaler: Series B, Human Geogr.* 96 (3), 277–291.
- Sennett, R., 2012. *Together: the rituals, pleasures, and politics of cooperation*. Yale University Press, New Haven, CT.
- Seyfang, G., Haxeltine, A., 2012. Growing grassroots innovations: exploring the role of community-based initiatives in governing sustainable energy transitions. *Environ. Plan. C: Polit. Space* 30, 381–400.
- Simons, A., Petschow, U., Peuckert, J., 2016. *Offene Werkstätten – nachhaltig innovativ? Potenziale gemeinsamen Arbeitens und Produzierens in der gesellschaftlichen Transformation*. Schriftenreihe des IÖW 212/16, Berlin (IÖW).
- Smith, A., Fressoli, M., Abrol, D., Arond, E., Ely, A., 2017. *Grassroots Innovation Movements*. Routledge, London.
- Smith, A., Hargreaves, T., Hielscher, S., Martiskainen, M., Seyfang, G., 2016. Making the most of community energies: three perspectives on grassroots innovation. *Environ. Plan. A* 48 (2), 407–432.
- Stabell, C.B., Fjeldstad, Ø.D., 1998. Configuring value for competitive advantage: on chains, shops, and networks. *Strateg. Manag. J.* 19 (5), 413–437.
- Tonkiss, F., 2013. Austerity urbanism and the makeshift city. *City* 17 (3), 312–324.
- Troxler, P., 2014. Fab labs forked: a grassroots insurgency inside the next industrial revolution. *J. Peer Prod.* 5 (<http://peerproduction.net/issues/issue-5-shared-machine-shops/editorial-section/fab-labs-forked-a-grassroots-insurgency-inside-the-next-industrial-revolution/>) (accessed 8 January 2015).
- Tschmuck, P., 2013. Das 360°-Musikschaffen im Wertschöpfungsnetzwerk der Musikindustrie. In: Lange, B., Bürkner, H.-J., Schüßler, E. (Eds.), *Akustisches Kapital. Wertschöpfung in der Musikwirtschaft*. Transcript (Kultur- und Medientheorie), Bielefeld.
- Vaiou, D., Kalandides, A., 2015. Practices of collective action and solidarity: re-configurations of the public space in crisis-ridden Athens, Greece. *J. Hous. Built Environ (Online)* 26th July 2015.
- Vathakou, E., 2015. Citizens' Solidarity Initiatives in Greece during the Financial Crisis. In: Clarke, J., Huliaras, A., Sotiropoulos, D. (Eds.), *Austerity and the Third Sector in Greece. Civil Society at the European Frontline*, Franham, London, pp. 167–186.
- Vojnovic, I., 2014. Urban sustainability: research, politics, policy and practice. *Cities* 41, 30–44.
- WBGU, 2016. *Hauptgutachten – Der Umzug der Menschheit: Die transformative Kraft der Städte, Berlin*.
- Winter, C., 2012. How media prosumers contribute to social innovation in today's new networked music culture and economy. *Int. J. Music Business Res.* 1 (2), 46–73.
- Wolfram, M., Frantzeskaki, N., 2016. Cities and systemic change for sustainability: prevailing epistemologies and an emerging research agenda. *Sustainability* 8 (2) doi:10.3390.