



# Repair's diverse transformative geographies: Lessons from a repair community in Stuttgart

Benedikt Schmid

## abstract

While repair appears antiquated in the 'disposable era' (Packard, 2011 [1960]: 55) – implying return and retrospection – its sympathizers celebrate repair's queering of capitalist growth economies and laud it as potential harbinger of post-capitalist futures (Baier et al., 2016). Against this background, the paper explores how repair practices relate to and affect social change. It offers a perspective that addresses repair's ambiguity while exploring its diverse transformative geographies. Empirically, the paper is based on ethnographic fieldwork with repair-related organizations in Stuttgart, Germany. Conceptually, it combines diverse economies' poststructural sensitivities of performativity and difference with practice theory's wariness of dualisms, in particular that of local and global. Proposing a non-hierarchical notion of scale that works through practices' spread and interwovenness the paper sets out to explore the variegated ways in which repair disrupts, shifts and (re)aligns other practices. Repair's transformative geographies are explored through the lens of five *logics* – economies, governance, communality, narratives and experiences – each foregrounding a different moment of repair's relatedness with broader practice alignments.

## Introduction

Repair dates from the middle English loanword 'repairen' – to go back or to return – which towards the end of 16<sup>th</sup> century came to refer to *restoration after decay*<sup>1</sup>. Tracing its etymology invites thinking about the role of repair in the Anthropocene. Restoration, of artefacts, bodies and social configurations, implies an orientation towards the past: a time of (perceived) intactness. Yet, looking or

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1 <http://www.dictionary.com/browse/repair?s=t>.

going back jars with the modernist temporality of progress (Rosa, 2010, 2013). The tension between repair's retrospective and Modernism's acceleration provides a first entry point into the nexus of repair and world.

Modern society needs '(material) growth, (technological) augmentation and high rates of (cultural) innovation in order to reproduce its structure and to preserve the socioeconomic and political status quo' (Rosa, Dörre and Lessenich, 2017: 53). Contrary to this, cries for sufficiency, mindfulness and deceleration – often articulated as post-growth – echo in parts of academia and social movements (Latouche, 2009; Johnsen et al., 2017). Repair, in this context, is (re)discovered as metaphorical and practical impetus towards post-growth or post-capitalism (Paech, 2013; Baier et al., 2016): metaphorically, as 'repairing past [and present] injustice' (Demaria et al., 2013: 200) and practically, as 'conservation, intensification of use or extension of useful life' of artefacts (Paech, 2013: 40). Although the paper uses repair primarily in the latter sense, as 'an informed and non-random action that establishes a function of something again, meaning a function that was previously performed but somehow is temporarily hindered' (Streibl, 2017), the sensitivity for social and ecological repair in a more metaphorical sense is no less important as the paper's backdrop.

Post-growth and postcapitalism both elude a straightforward definition, for '[a]s soon as we begin to deal with what comes next, we enter the terrain of speculation, conditionality and advocacy, as well as hope and imagination' (Chatterton, 2016: 405). Keeping with Chatterton, this paper uses postcapitalism to refer to practices that 'critically intervene in and attempt to solve societal crises but in ways that foreground equality, openness and social justice'. Post-growth is closely related, since 'the end of growth challenges us to imagine what life after capitalism might look like; for an economic system in which capital no longer accumulates is no longer capitalism, whatever one might want to call it' (Skidelsky and Skidelsky 2012, cited in D'Alisa et. al., 2015: 11).

*Reparieren* – going back, returning – is a recurring motif in post-growth and postcapitalist debates. Latouche's eight R's – reevaluate, reconceptualize, restructure, relocalize, redistribute, reduce, re-use, recycle (Latouche, 2009: 33) – invoke a 'return to a previous condition, restoration, withdrawal', in making use of the prefix 're-'<sup>2</sup>. At the same time, this observation addresses a potential pitfall of such imaginaries of social repair: the return to an intact past and a longing for a peaceful, controllable existence expressed through a naïve localism, the glorification of the past, or the reification of community (Aiken, 2017). There is a

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2 dictionary.com/browse/re-

thin line between post-growth's affirmation of deceleration and the escape into a romanticized past, place or relation.

A second and related entry point to repair is its ethical and political coordinates. Post-growth or postcapitalist perspectives engage in politics of sufficiency, subsistence economies and regionalized value chains as vehicles towards deceleration and detachment from formalized growth-economies (Paech, 2013). Concomitant practices – such as repair – have the potential to create spaces of alternative economizing that are partially removed from capitalist valorization. Yet, repair does not challenge or disrupt capitalist economies per se. Rather, repair is also valorized and integrated into market economies: service industries and manufacturers of spare parts for instance have large turnovers – quite prominent in the automobile sector for instance. More recently, explicitly repairable products, such as the *Fairphone*, create new market niches. Furthermore, repair's empowerment bears moments of neoliberal responsabilization (Brown, 2015) and by extension a collectivization of capitalism's negative externalities. One might go as far as pondering whether these non-capitalist practices contribute to capitalism's survival of its internal contradictions. At any rate, examining repair's potential for postcapitalist transformation cannot be severed from a closer look at the diversity of repair practices and trailing their relatedness across scale.

This paper disentangles repair's ambiguities and sheds light on its different trajectories – offering an approach to explore repair's diverse transformative geographies. Section two joins considerations on technical and politico-economic developments to explore the decrease of reparability and the politics of its reemergence. Section three empirically traces cases in which repair matters and in which it fails, drawing on data from ethnographic fieldwork in Stuttgart. Section four, then, expands on the paper's conceptual backdrop in exploring how diverse economies and practice theory perspectives speak to transformative geographies and scale. Section five disentangles repair's diversity by exploring its transformative geographies through five perspectives on practices' relatedness – economies, governance, communality, narratives and experiences. The paper closes with a reflection on repair's role in postcapitalist politics.

### **Repair's ups and downs**

Playing with the double meaning of 'making good', Carr and Gibson (2016: 305) expound the nexus of making, repair and maintenance. Making, maintaining and repairing suggest a continuity and connectedness in work's socio-material relations. Work as activity 'which creates use values and is qualitative

determined' contrasts to labor 'which creates value and is only measured quantitatively' (Marx, 1981 [1867]: 138). Labor's purpose exhausts itself in the creation of exchange value whereas the laborer is alienated both from the process as well as the product. 'Satisfying, imaginative and independent work' (Illich, 1973: 32), on the other hand, implies a continuity between creator and artefact that exceeds production itself, reaching beyond the practice of making and passing into maintenance and repair. Work, in other words, has a stake in the existence of artefacts that goes beyond the bringing-something-into-being and is equally concerned with *keeping-it-in-being* and restoration. Carr and Gibsons' assertion that 'a future where repair and maintenance become redundant in favor of replacement entirely misses the point' (2016: 306), then, reads as warning of a world in which labor substitutes work and artefacts are severed from the continuity the latter implies.

Decay is nothing out of the ordinary, but expressive of the entropic tendency that accompanies the constant becoming – or maybe *un*-becoming – of the world (Graham and Thrift, 2007). The more important it is to acknowledge maintenance and repair as integral parts of making. Yet, 'in acceleration society, things no longer get repaired: while we can speed up production, we can't significantly speed up maintenance and service' (Rosa, 2010: 86) – the stagnating work of maintenance or the retrospective work of repair have lost their *raison d'être*. This is reflected in a decrease of reparability (Pope, 2017) as well as in the ways humans relate to artefacts and to each other (Rosa, 2010). In the following, I will provide three short accounts on the decline of reparability; setting the stage for the variegated responses to current replacement-societies, the repair of reparability and the claim that repair (still) matters.

The first story begins with labor division and the complexification of production. From a technological-historical perspective, the increasing mechanization and differentiation of production processes are drivers of products' decreased reparability. Illich (1973: 20) argues that 'the growth of tools beyond a certain point increases regimentation, dependence, exploitation and impotence', whereas he uses the term tool broad enough to 'subsume ... all rationally designed devices, be they artifacts or rules, codes or operators'. Pertaining to repair, then, Bertling and Leggewie (2016) observe that the organizational separation of repair and production made the consideration of a general reparability increasingly less significant for product design. Value chains progressively spread geographically as well as socially – weakening the connectivity of creator and artefact. Labor substitutes work and with it centralized standards replace professional ethics. Design, development, production, customer service and disposal are relegated to different departments and then processed according to regulation. Abstraction supplants the immediacy between

subject and artefact and therewith the continuity implied in work. Maintenance and repair are severed from the productive process, no longer being integral parts of bringing something into being.

The second story centers around a postmodern aestheticization of society. Baudrillard describes postmodernity as a

culture of fragmentary sensations, eclectic nostalgia, disposable simulacra, and promiscuous superficiality, in which the traditionally valued qualities of depth, coherence, meaning, originality, and authenticity are evacuated or dissolved amid the random swirl of empty signals. (quoted in Baldick 2008, 266)

Design practices actualize postmodern aesthetics in following a logic of form (Anusas and Ingold, 2013). (Post)modern subjects, then, encounter surfaces and forms but hardly know the workings that are hidden from them (Illich, 1973). Surfaces trump depth and in doing so 'reduce...our ability to perceive the depth and scope of our material involvement with the world around us' (Anusas and Ingold, 2013: 58). Paralleling the hidden complexity of artefacts, markets conceal the social relations that assume 'the fantastic form of a relation between things' (Marx, 1981 [1867]: 165) – fetishism. In an accelerating world of surfaces, (post)modern subjects are not sculptors of their environments but (passive) participants in self-regulating markets. While product design is increasingly individualized and considers consumers as multi-sensory and affective beings, the underlying social and material relations of capitalism's relations and commodities are not intended to be penetrated, uncovered, discussed and questioned. This is epitomized by big data's algorithms that operate hidden from the shiny user surfaces of Amazon, Google and others, generating massive quantities of commodified information entangled with flows of money and relations of power. Carr and Gibson (2016: 304) deduce that this "invisibility" conspires with a growing inability and disinterest in how things are made (and consequently how they are [maintained and] repaired)'.

A third narrative incorporates society's aestheticization and technological complexification into a broader critique of modernist acceleration (Rosa, 2013). Decreased reparability, then, appears not solely as an accidental consequence of complex global value chains, specialized production and (post)modernist aestheticization, but as outcome of shortened product cycles in the name of 'growthmanship' (Packard, 2011). Economies geared towards competitiveness and profit-maximization are driven to increase the throughput of products. Durable and repair-friendly product design undermine these goals in the long run (Packard, 2011; Pope, 2017). What appears to be irrational from a material point of view, makes perfect sense within capitalist social relations: 'people must learn to consume more and more or, they are warned, their magnificent

economic machine may turn and devour them' (Packard, 2011: 22). Besides the expansion of the total of consumer goods owned on average, planned obsolescence – the 'strategy of planning or designing a product with a limited useful life, so it will become obsolete, unfashionable or no longer functional after a certain period of time' (Rivera and Lallmahomed, 2016; see also Bulow, 1986) – is a major driver of economic growth. Obsolescence of quality, function, desirability or systemic obsolescence accelerate product cycles and create opportunities for profitable business. While caution needs to be exercised as to the reach and scope of intention, there is ample evidence of products' reduced life span far beyond that what is technically necessary or desirable (Schridde, 2014). Obsolescence translates into practice for instance through the use of breakable materials, integration of weak points or counters, short product cycles, creation of fads, incompatibilities or the discontinuation of support. Furthermore, the shortening to products' life span includes the complication of repair and maintenance – through overpriced repair, lack of spare parts, inaccessibility, and prohibition of self-repair – that are made 'so difficult and unreliable that replacement is easier' (Packard, 2011: 74).

The reinvigoration of repair through repair cafés, open workshops, repairable products and online repositories, then, appears as counter-hegemonic movement with the potential to disrupt the stories and trajectories of waste, consumption and growth (Baier et al., 2016). Repair has become a frequent theme in thinking about alternative modes of economic organization. For Paech (2016), maintenance and repair are crucial cornerstones of subsistence-oriented and regional economies that ultimately reduce dependence on capital and growth-based institutions. Hobson (2016) discusses the importance of repair, maintenance and recycling in circular economies. Bertling and Leggewie (2016) take it one step further in positing the need for a 'repair-society'. And Baier et al. (2016) situate repair within the context of a broader movement that work towards 'repairing the world'. Others, in the meantime, caution us not to over-interpret the sites of repair (and related practices such as local production, upcycling and hacking) in the context of debates around postcapitalism, emphasizing the heterogeneity of these spaces (Bürkner and Lange, 2016). The next section, therefore, digs deeper into the empirical evidence on repair.

## **Empirical evidence**

Repair cafés and open workshops have come to the fore as important sites materializing around the entanglement of repair with related practices such as making, tinkering and recycling (Baier et al., 2016; Bürkner and Lange, 2016; Smith, 2017). Repair cafés are (recurrent) meetings organized around

community-supported, decommodified repair. More than 1500 repair cafés have been established worldwide<sup>3</sup>. Open workshops parallel this development, providing an infrastructure to enable practices of repair, (local) production and appropriation (Lange, 2017). Note, however, that open workshop and related terms such as makerspace, hackerspace, and fablab refer to a wide variety of spaces that differently house inclusive/exclusive, commodified/decommodified, emancipatory/conditioned practices (Davies, 2018; Richterich and Wenz, 2017).

In addition, some (usually small) enterprises deliberately (re)introduce reparability and longevity in product design, arguably most well known in case of *Fairphone* (Netherlands). Growing Internet platforms, online collections and communities such as *iFixit* and *Thingiverse* further accompany these developments. *iFixit* hosts an online collection of repair manuals and sells corresponding specialty tools and spares. *Thingiverse* is an online collection of digital design files, amongst others for spare parts.

These developments provide the paper's backdrop, against which its empirical focus on a place-based 'repair-community' is situated. The paper's empirical insights are based on a two-year involvement with activists and eco-social entrepreneurs in Stuttgart, Germany (Schmid, 2018). Repair was a recurrent theme. With 'repair community' I am adopting a label that one participant used to describe the diverse individuals and organizations that gather around repair practices in the local context<sup>4</sup>.

The primary site of the project's ethnography was an open workshop. The participant observation carried out within and beyond the workshop's physical spaces included the regular attendance of repair cafés, collaboration on operational and organizational processes of the workshop, the acquisition of trade skills and the ability to operate machinery, participation in everyday correspondence and attendance of and collaboration at various events such as trade fairs, (interorganizational) meetings, workshops, panel discussions and others. Without previous training in crafts or technical work, it was challenging to participate in the community's 'doings and sayings' (Schatzki, 2016). This was compensated for by the patience with which I was welcomed. The study's ethnography is backed up by semi-structured interviews with a number of activists and eco-social entrepreneurs from the local context.

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3 <https://repaircafe.org/en/about/>.

4 Here I do not use of the concept of 'community of practice' (CoP). While helpful in a number of contexts, it runs the risk of narrowing the community in this study a priori.

Stuttgart is located in the South of Germany, in a prosperous region with a strong industrial sector. Global players such as Siemens, Bosch and Daimler are complemented by small and medium sized enterprises, which account for a significant proportion of employment and turnover<sup>5</sup>. Situating the maker community in this context is important in at least four ways that I will formulate as hypotheses, since no systematic comparative case study was conducted. Many participants are employed by or have contact to technically oriented enterprises. Consequently, there are interconnections between the repair community and (traditional) enterprises that transpire through an exchange of skills, an exchange of materials and interorganizational cooperation. (1) Specialized knowledge and skills enable a semi-professional operation of the open workshop and other organizations, in particular facilitating a broader availability of skills and knowledge that are shared within the community. (2) Material support through more solvent enterprises helps repair cafés and the open workshop to operate on donations and a low usage charge respectively, thus being available to a broad audience. (3) Cooperation, for example through courses and team building events provides a further source of revenue with which the low entrance fee of the open workshop can be cross-subsidized. (4) Last but not least, and on a more speculative note, the broader community can be characterized by a pragmatic and non-dogmatic take on issues of sustainability and economic growth. In conversations and interviews, this was repeatedly attributed to the technologically-oriented context by participants themselves, but might reflect the sensibility of maker communities more broadly (Lange, 2017).

### *Repair matters...*

Various forms of repair-related organizing that include non-monetized repair events, accessible permanent workspaces, reparable products and cultural interventions interlock within and without the local context. Stuttgart has several repair cafés that coordinate the spatiotemporal proximity of materials, competences and meanings to enable practices of repair, two of which were part of this study. The open workshop, *Hobbyhimmel*, thereby, is a 'natural complement' (Interview\_VOI\_b) in particular with respect to repair's material requisites (spaces, tools and machinery), also hosting one of the repair cafés. Being opened on 7 days a week the workshop makes repair's materials, knowledge and skills available beyond the monthly repair café events. Furthermore, the workshop's sem-professional environment facilitates and

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5 i.a. for metal production, metal processing, electronic and computing devices, the bulk of revenue is generated by the cooperation of between 50-500 employees. Engineering and automobile manufacturing, in turn, is dominated by enterprises with 1000+ employees. [<https://www.statistik-bw.de/Industrie/Struktur/VG-GK-BBEU.jsp>].

enhances repair above the level of the improvised and temporary gatherings repair cafés are usually associated with (Baier et al., 2016). For instance, through 3D printing, allowing for a local production of spare parts. This becomes particularly relevant in corporation with other organizations such as *Relumity*, an eco-social enterprise that develops repairable lights.

*Relumity* addresses a more fundamental dimension of repair, focussing on products' reparability through design and production. Parts of the production of *Relumity LED#1*, a lamp for household use, was realized in the open workshop; not only to produce locally but also to test and ensure the local capacity for maintenance and repair:

...I can actually say that the spares are locally available – not necessarily as tangible objects, but they can be produced [by means of 3D printing] and reproduced locally. The materials are available and the means of production are available through the open workshop (Interview\_U2bii; author's translation).

Due to financial reasons, *Relumity* had to discontinue the production of *Relumity LED#1* and shift its focus to business-to-business customers. Yet the infrastructure of the workshop remains in place and with it the possibility to produce spare parts. Since each customer received a manual and the electronic schematic upon buying the lamp, repair is decentralized and independent of the company's subsistence.

Frequently, companies do not provide manuals and spares. Online repositories for manuals and digital design files – such as aforementioned *iFixit* and *Thingiverse* – address this issue. *iFixit* operates its sole European branch office in Stuttgart. Its members are involved locally for example through the provision of tools for repair cafés or a three-monthly presence through a pop up store in Stuttgart's city centre<sup>6</sup>. *iFixit* combines commodified and non-commodified repair practices. Hosting a large collection of manuals and engaging in repair-related politics, *iFixit* has gathered a global community around issues of repair. In particular through its claims to a right to repair<sup>7</sup> and its repair manifesto<sup>8</sup>, the network draws attention to the lack of repair-friendliness and ensuing wastefulness of mainstream production demanding improvement of product

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6 'The first store of the global network *iFixit* has opened in the Fluxus mall. There, clients can learn to repair their electrical devices themselves with support [from *iFixit* personnel]' (<https://www.stuttgarter-zeitung.de/inhalt.netzwerk-iFixit-im-fluxus-in-stuttgart-im-reparier-glueck.8cc497f8-9ecb-472a-89aa-664eeerafa67.html>, author's translation).

7 <https://iFixit.org/right>.

8 <https://www.iFixit.com/Manifesto>.

reparability. At the same time *iFixit* runs a business, selling specialty tools and spares.

*iFixit* exemplifies how members of the community also engage in repair-related issues beyond the act of repairing itself. Sensitizing people for problems around waste and resource consumption and empowering individuals to repair are central concerns for most participants. One protagonist described the open workshop as ‘Trojan horse’ for sustainability-related practices, since users of all backgrounds with different agendas are confronted with issues around sustainability and waste – repair is actively politicized.

Some repairers refer to their activities as hacking. Hacking is usually associated with a ‘material practice that involves making a difference in computers, communication and network technologies, which may well be illicit’ (Deseriis 2015, quoted in Richterich and Wenz, 2017: 7), but also applies to ‘finding creative solutions’ (Interview\_P01a) in general. Examples include the surpassing of property or licensing laws.

Other organizations are linked to the ‘repair community’ through non-commodified peer-to-peer support. This support facilitates a number of sustainability-related projects that do not revolve around repair directly. For instance, *Lastenrad Stuttgart*, an association providing a free cargo bike lending system, can maintain and repair its bikes in the open workshop free of charge – including support through the community.

### *... and repair fails*

Yet there are many occasions on which repair fails or is rather ambiguous with respect to sustainability. Embedded within institutions and cultures of replacement, obsolescence and growth – as sketched above – repairers face products not intending (self-) repair, missing repair manuals or infrastructures, a replacement culture and other factors that lower rates of success. Besides unsuccessful attempts that ultimately result in the purchase of new products, it is difficult to assess the actual effects of repair:

... effort and emissions that are caused by the repair have to come below those caused by production [of a new product] and furthermore have to overcompensate for inferior energy efficiency to be justified from a sustainability perspective. (Bertling and Leggewie, 2016: 278; author’s translation)

Beyond a narrow focus on resources, the communal aspects of repair are equally ambiguous. Participants of repair cafés are often solely interested in the artefacts’ restoration not the act of repairing itself. On the other hand, expert volunteers

regularly lose themselves in the process, or they choose the quickest way – repair without explanation – due to time pressure.

Furthermore, the products that are intended to be repairable through the buyer face considerable legal and financial obstacles. *Relumity LED#1*, designed to allow for self-repair, requires a legal disclaimer that repair has to be guided by a technical professional. Repair related organizations, in this respect, often operate in a grey zone of liability, partly cushioned by the informal relations of the community they are embedded in. Owing to internalized costs and low-scale production, the price of repairable products such as *Relumity LED#1* or the *Fairphone* are also considerably higher than that of competitors – rendering the products exclusive to financially better-off buyers.

Eco-social enterprises' engagement with repair, therefore, is particularly ambiguous. *Relumity*, for instance, specializes in a business-to-business context while experimenting with new business models to reconcile disadvantages in cost with competitive markets. Selling a service – for instance the provision of light – instead of the materials themselves, internalizes the incentives of longevity and reparability and allows compensating for higher costs that originate in fair sourcing and local or regional production.

### Transformative geographies

The presented findings give evidence to repair's revival. Yet, rather than simply returning, repair practices have acquired a distinctly political overtone. In a world, in which replacement and renewal are intrinsic to the mode of production repair in itself is rebellious in that it obstructs the movement of constant replacement. Simultaneously, repair is enacted within and alongside social relations of domination, exploitation and exclusion. The ambiguity and complexity of actually existing repair practices and their embeddedness in broader constellations requires an approach that is sensitive to repair's diversity and its scalar implications alike.

Gibson-Graham's reading for difference in a 'diverse economy' (Gibson-Graham 2006; 2008) opens ways to appreciate practices' ambiguities, contradictions and multifacetedness while inspiring a rethinking of the scales of social relations. Gibson-Graham rid economy of 'all essential content' and in doing so propose an economic ontology that is perhaps the closest it can come to non-essentiality 'without rejecting the term 'economic' itself' (Miller, 2013: 521). Such a 'weak theory of economy does not presume that relationships between distinct sites of the diverse economy are structured in predictable ways, but observes the ways

they are always differently produced according to specific geographies, histories and ethical practices' (Gibson-Graham, 2006: 71). A similar case can be made for other dimensions of social life such as politics (Laclau and Mouffe, 1985; Rancière, 1998), community (Nancy, 1991) or identity (Butler, 2006). Non-essentialist approaches to economy, politics, community and identity question the realist project that attempts to unravel the 'true' constitution and workings of each social field – and for that matter the assumption of separate fields, systems or structures. Instead, they offer a perspective that exposes the contingency of economy, politics, community and identity as performative projects.

Denying economy, politics, community or identity 'a fundamental, structural or universal reality and instead identify[ing] them as contingent outcomes of ethical decisions, political projects and sedimented localized practices' (Gibson-Graham 1996, quoted in Gritzas and Kavoulakos, 2016: 921) moves towards a non-hierarchical conception of scale (Marston, Jones and Woodward, 2005; Springer, 2014). Appreciating the continuous becoming of the world – and the work of keeping-it-in-being or restoring it after decay (see above) – situates 'the world we inhabit' in relation to the practices through which it is 'routinely made and re-made' (Nicolini 2013: 2). Practices, here, are typified forms of activity that are independent of *individual* participants, but contingent on their continuous performance, materialized in body-minds, things and artefacts (Reckwitz, 2002). Instead of 'describing the world in irreducible dualisms between actor/system, social/material, body/mind and theory/action' – or *micro/macro* – the processual view of the world as 'an ongoing routinized and recurrent accomplishment' (Nicolini, 2013: 2) challenges the 'macro-mystification' (Marston, Jones and Woodward, 2005: 421) exercised through hierarchical conceptions of scale that 'obscure those sites of ordering practices, as well as the possibilities of undoing them' (*ibid.*: 427). In contrast, 'rhizomic' (Nicolini, 2013) and 'multi-sited' (Everts, 2016) approaches aim to grasp the spread, interwovenness of repair and other practices. They reformulate scale from scales-as-levels to a geo-historically rooted nexus 'in the sense of a finite plentitude that has no dimensions above its elements' (Schatzki, 2016: 6).

A non-hierarchical understanding of scale, then, opens a window into transformative geographies by conceiving of power as transpiring through 'alignments' (Rouse, 2001: 204). Power does not reside within actors or structures but emerges through the ways human activities interlock with each other and the more-than-human world, materialize in bodies and artefacts, and become relevant in situated performances. An emergent and relational notion of power acknowledges the possibilities of transformation 'because the presence of an alignment, and its effectiveness, depend upon how the alignment is sustained or transformed over time' (*ibid.*). Understanding how power travels through

specific sites, then, 'can significantly unsettle dominant patterns, create shifts in the spaces where power is exercised and open up new and radical spaces' (Ahlborg and Nightingale, 2018: 388).

Since the paper starts from a particular practice – repair – and works its way outwards, its perspectives on scale and power grow from the multiple relations repair practices enter and are entangled in. Nicolini proposes the notion of *zooming* to bring particular practices – in our case repair – in conversation with its 'wider picture', which 'amounts to nothing more and nothing less than an understanding of the association between practices and how they are kept together' (Nicolini, 2013: 234). In other words, Nicolini's approach initiates a perspective on how repair hangs together with other practices, with a particular interest in how repair shifts, disrupts or stabilizes these alignments. Repair's diversity becomes visible by considering the different relationships it simultaneously transpires through: economic, political, communal and subject-related. Transformation, then, is understood through the ways repair practices differently relate to and transform alignments. The remainder of this paper analytically disentangles repair's interwovenness in ecologies of practice. In doing so, it explores the possibilities repair opens for *other* forms of co-existence.

### Disentangling repair

Elsewhere (Schmid, 2018), I have proposed a *diverse logics perspective* to discuss the ambiguities, contradictions and compromises of actually existing forms of postcapitalist organizing. With logics I mean *patterns in the relatedness of practices*. In other words, logics are a typing of the ways in which practices hang together and therefore an attempt to operationalize and guide Nicolini's notion of 'zooming' (see above). While practices – such as repair – are entangled and aligned in multiple ways the practice formations that these entangled practices constitute are often (mistakenly) reified as fixed and bounded social phenomena (such as *the market*, *the economy*, *the state* or a specific form of community or identity).

An approach that is sensitive to repair's diversity and its scalar implications – as inspired through diverse economies and practice theory perspectives discussed above – can disentangle the various ways in which repair hangs together with other practices in recurrently (re)producing the world we inhabit. In doing so, it sheds light on the diverse roles of (apparently local and small) repair practices. To disentangle repair, I will look at repair's relatedness with broader alignments of practice through four lenses: economies, governance, communality and narratives/experiences.

*Economies* capture practices' relatedness through moments of creation, appropriation, reciprocity, comparison and material provisioning that are closely linked to practices such as production, consumption, exchange, and distribution. Within capitalist social relations, markets are important (yet by no means the only) forms of aligning economic practices. Markets themselves do not exist as entities but describe a particular form of practices' interrelatedness. They are best understood as 'practical accomplishments' that are 'always in the making' (Berndt and Boeckler, 2010: 565). The first perspective, then, revolves around how repair challenges markets as mode of organizing economic activities and reveals alternative possibilities.

The conservation and restoration through successful repair extends products' lifespan and reduces one (amongst several) reasons for their replacement by new commodities. Moving from replacement to repair slows down cycles of production and consumption and thus causes partial withdrawal from market-mediated practice. In particular when repair itself is de-commodified it carves out non-market spaces of renewal. Due to the complexity of globalized commodity chains (for instance of electronics) the implications spread far beyond place. This, however, is only true if repair actually prevents new purchases directly or indirectly.

Apart from slowing down globalized consumption, repair practices also contribute to shifting spatialities of production. In the case of *Relumity LED#1*, the relocalization of production goes hand in hand with repair to ensure continuity between product creation and maintenance. Repair, here, acts as a starting point to reconfigure commodity chains and product design. In other cases, such as *Fairphone*, repairable products create niches in geographically dispersed relations of production and distribution, shifting their ethical and political coordinates. New business models based on longevity, reparability and modular design thus emerge. Yet the expansion of markets of tools, spare parts or (often pricy) repairable products also reproduce or even perpetuate unjust and exclusionary economic relations. In some cases, the products' high costs exclude people and groups with little financial resources. In others, repair practices only supplement rather than replace linear economies and cyclical consumption.

In summary, it can be said that repair's economies take effect beyond the local sites they are embedded in. Bound up with global patterns of production and consumption, a local shift in economic activity challenges, replaces and shifts economic relations in some cases and aligns with established market practices in others. Repair's economies work through a variety of configurations ranging from non-commodified repair practices to new business models based on repair. They differ with respect to scope, how they address social and environmental

issues and in how far they challenge institutionalized economies more broadly. Repair simultaneously works in the context of different paradigms such as green economy, sustainable development, post-growth or postcapitalism.

*Governance* captures practices' relatedness through moments of rule, domination, power and norms that are closely linked to bureaucratic practices, law (enforcement), policing as well as the more informal (re)production of norms and rules actualizing relations of 'precedence and hierarchy' (Graeber, 2014). Power relations materialize in institutions – in particular states – which, however, like markets do not exist as entities but are *always in the making*. The second perspective, then, revolves around how repair aligns with, challenges, or shifts power relations and hierarchies and opens up alternatives.

Much organizing around repair is accompanied by a critique of regulations that prevent repair as well as the lack of regulations around product quality and reparability. *iFixit's* claim to a right to repair and its repair manifesto as well as the self-understanding of most repair cafés collectives show this prominently. Charter and Keiller (2014: 14) comment that 'it is noteworthy that over the next five years almost 70% of respondents expect their repair café to be more involved in campaigning to improve product reparability and longevity'. Repair-related organizing acts as lever to politicize and democratize product design and production, forcing repair into the political agenda<sup>9</sup>.

Thereby, the development of repairable products such as the *Fairphone* or *Relumity's* lamps provide tangible alternatives, substantiating the claims that more repairable products are technically feasible and socially desirable if legal frameworks are changed accordingly. The increasing awareness of repair, then, is starting to affect shifts towards institutionalizing and codifying reparability without, however, necessarily challenging (state) institutions as such.

Others deliberately circumvent (and subvert) formal institutions through 'hacking'. Hacks and their sharing evidence the appropriation of technologies below and beyond formal frameworks subverting proprietary rights, patents and licenses. While hacking features most prominently with respect to digital technologies – for instance as 'hacktivism' – it can also describe non-digital practices that navigate statutory grey zones around liability, appropriation of products and legal requirements for self-repair more broadly. Although, repair

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9 The EU Commission considers measures to improve the durability and reparability of products ([http://www.europarl.europa.eu/news/en/press-room/20170629IPR\\_78633/making-consumer-products-more-durable-and-easier-to-repair](http://www.europarl.europa.eu/news/en/press-room/20170629IPR_78633/making-consumer-products-more-durable-and-easier-to-repair)).

and hacking are not necessarily intended as political practices (Davies, 2018) their interaction with other practices might well be political.

A perspective on repair's interaction with (codified) norms and rules shows different ways of alignment, subversion and disruption. Much organizing around repair contains explicit criticism of the laws and regulation around obsolescence, product design, reparability and proprietary rights. Up-front this is done through campaigning and petitioning that is in accordance with legal institutions. Yet, some repair practices (in particular those described as 'hacks') ignore property rights, licenses and other regulations, undermining some of the fundamental roles of state institutions within capitalist relations.

*Communality* describes practices' relatedness through moments of togetherness, solidarity, conviviality, non-violent and non-hierarchical negotiation, disagreement and belonging (Nancy, 1991; Illich, 1973; Rancière, 2004). Repair practices differently engender and acknowledge togetherness. A third perspective, therefore, focusses on the cooperation, ethics, inclusion and exclusion of and through repair.

Repair cafés and other repair gatherings are collective endeavors. Offline and online communities form around repair, often connected to broader movements that work around issues of sustainability and social justice. Sites of repair, thereby, function as social catalysts putting people in touch with other subjects and different worldviews. Acting as 'Trojan horse' (B\_VOIP), sites of repair undermine milieus' confines, engendering new communal alignments. Repair, therefore, facilitates the creation of (public) spaces for politics and disagreement.

Moreover, repair penetrates commodities and makes visible what is below their material (and social) surfaces. By inviting an interest in how things are made, repair often triggers reflections on obsolescence, replacement and the complex and often unjust global value chains commodities pass through. Conversations about waste, growth and sufficiency can regularly be overheard in repair gatherings. Penetrating commodities' social depth, then, prompts people to think about, discuss and practice economic being-in-common differently.

Nevertheless, although the open workshop and the repair cafés in this study work to integrate individuals and groups of different socioeconomic backgrounds, they are less inclusive across gender and ethnicity<sup>10</sup>. Also, repair's sites often see little fluctuation, and create (old and new) closures. While repair practices catalyze the politicization of community (being-in-common), they also reify, close off and

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10 This is based on participant observation, not backed by quantitative data.

exclude (common being) (Nancy, 1991). In particular high-priced repairable commodities create new exclusions along socioeconomic lines and, as lifestyle artifacts, can function as tokens for *othering*.

In sum, repair practices support the building local collectives, open communities to excluded others and politicize being-in-common. In changing the relations with close and distant others, repair reconfigures communities beyond place. Simultaneously, repair-related practice (re)produces old and new lines of exclusion and identification. In particular the latter is also connected with narratives and experiences that I will explore next.

*Narratives* describe practices' relatedness through stories, imaginaries, meanings, knowledges, theories and concepts and are closely bound up with *experiences* that describe practices' relatedness through affects, experiencing, capacities, habits, and aesthetics. Narratives and experiences provide a perspective around (re)subjectivation, sense-making, identification and (re)adjustment beyond individual subjects. Repair, here, is questioned for its capacity to create, shift and disrupt the corresponding stories, teloi, abilities and affects.

Repair is deeply sensual and engages subjects with materials as well as their own capacities. (Re)acquiring the ability to perceive 'the depth and scope of our material involvement with the world around us' (Anusas and Ingold, 2013: 59), then, generates an awareness of artefacts' textures, properties and values and creates a shared appreciation of quality and continuity. These experiences jar with the realities of replacement and acceleration and unsettle sedimented narratives and subjectivities that go along with it. More practically speaking, experiencing repair also empowers people to appropriate technologies. In doing so, subjects acquire skills for sufficiency and subsistence-oriented economizing while experiencing a sense of self-efficacy and worth through their engagement in repair and resonance (Rosa, 2016).

Thereby, the significance of re-subjectivation extends well beyond individual participants. Organizing around repair provides counter-experiences (Gibson-Graham, 2006; Healy, 2015) to capitalism's wasteful trajectory of continuous growth. In contrast, the preserving works of maintenance and repair allow deliberation and resonance to (re)enter social relations. With it, new imaginaries about how to organize socio-material being-in-common emerge. Stories of possibility (Gibson-Graham and Roelvink, 2009) and the importance of utopia (Bloch, 1985) engender new alignments of practice based on principles of communism (Graeber, 2014). Yet, alternative narratives and experiences do not have to be affirmative and might disenchant sympathizers of decommodified

repair. Failure, frustration, and estrangement accompany and spread through repair practices just as achievement, self-efficacy and belonging do.

In line with the previous sections, a perspective on practices' relatedness through narratives and experiences encourages us to consider how specific moments of repair travel and spread across bodies, minds, and sites. Gibson-Graham maintain that changing the stories of the world is an integral part of changing the world (Gibson-Graham, 2006). On a similar note, Lee writes that the 'recognition, practice, and advocacy of these multiple social relations may make them revolutionary acts as they are genuinely subversive in gnawing away at the apparent verities and certain singularities of capitalism' (Lee, 2016: 284). In providing a counter-experience, repair can shift subjectivities (including capabilities) towards preservative forms of (economic) being-in-common.

## Concluding thoughts

After situating repair practices in the contradictory temporalities of modernity, the paper proceeded to explore repair's political voices that differently speak to or against various social institutions. While, acknowledging the multiple motivations, teloi and rationalities of repair (sometimes repair is explicitly non-political), the paper focused primarily on its politics as the ways in which repair's diverse performances take effect on other practices. Inspired by the literatures on diverse economies and practice theory, a nonhierarchical notion of scale – in the sense that reality does not play out on ontologically distinct 'levels' – provided the conceptual grounding to trail how repair relates to (sedimented) practices and their alignments. Disentangling repair's diversity through perspectives on different forms of its relatedness opened windows on the power relations that transpire through the sites of repair. Economies, governance, communality, narratives and experiences provided different lenses on how repair intervenes with practices' broader patterns.

While repair is a misfit in modernist societies that stabilize through '(material) growth, (technological) augmentation and high rates of (cultural) innovation' (Rosa et al., 2017: 1), it was shown that repair is not a postcapitalist practice *per se*. Sympathetic to the transition literature that discusses the engagement in collective non-commodified repair practices as integrate part of post-growth economies and harbinger of postcapitalism, the paper proposed a differentiated perspective that acknowledges the heterogeneity of repair within these emergent forms of organizing. Repair practices have various consequences including interferences with global value chains, generation of new markets and shifts in their ethical coordinates, (re)politicization of the production, design and

appropriation of artifacts, creation of new communities and identities as well as their closure, and the development of old and new stories, affects and capabilities around different modes of economizing.

Nevertheless, the paper leaves many questions open having only touched upon some issues while ignoring others altogether. Conceiving of power as emergent and relational does not mean to ignore the restrictions individual actors and groups face in their engagement in postcapitalist politics. Like other potentially subversive practices, repair can be co-opted and instrumentalized for purposes that run contrary to emancipation, justice and equality. These issues remain important perspectives for further discussions of repair practices.

I would like to close, however, with a deliberation that returns to repair's temporalities. While jarring with modernism's acceleration, repair is at the heart of its continuation. Repairing broken things, bodies and natures patches capitalist socio-material relations that come apart at the seams. If 'precarity is the condition of our time' (Tsing, 2015: 20), the preserving work of repair is a vital part of what holds that world together and allows it to continue. Alongside the reproductive work (of birth, nursing, creation) the restorative work (of healing, care, repair) is part of capitalism's 'constitutive outside' (disproportionately provided by women) (Gibson-Graham, 1996: xxiii). Listening to the 'polyphony' of this restorative work 'to appreciate the multiple temporal rhythms and trajectories' (Tsing, 2015: 24) is a stepping-stone towards the (re)politicization of the economic and the enactment of other worlds.

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## the author

Benedikt Schmid is a PhD Student at *Identites, Politiques, Societes, Espace* at the University of Luxembourg. His research focuses on alternative economies and eco-social transformation with a particular interest in post-growth organization(s). His primary empirical interest is on localized productive infrastructures and the concomitant practices of tinkering, making and repair. Since 2017 he is manager of the working group on post-growth economies sponsored by the Academy for Spatial Research and Planning. Email: benedikt.schmid@uni.lu