

# Transformative Innovation

by

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## **Abstract**

This article scrutinizes the potential of transformative innovations to contribute to social-ecological transformations. It problematizes the positive connotation linked to innovations in tackling contemporary social and environmental challenges by giving an overview of theories of innovation, with a focus on social innovations, and systematizing the multiple meanings of the term transformation. We define transformative innovations as innovations that contribute to those transformations that are desirable and feasible in a specific conjuncture. Desirable are innovations that enable a good life for all within planetary boundaries, feasible are those that can be implemented here and now, given specific constellations of actors, power relations and structural constraints and possibilities. Furthermore, we describe the current conjuncture, dwell on collective and political actions and explore one promising transformative innovation: creating and strengthening sustainable and inclusive provisioning systems, that are feasible in the short term and effective in the long-term.

**Keywords:** social-ecological transformation, transformative innovation, social innovation, critical realism, provision systems, foundational economy

**JEL:** F54, F55, O1, O10, Q, Q00, Q01, Z1, Z10

## INTRODUCTION<sup>1</sup>

Future-fit socio-economic systems have to create new ways of organizing production and consumption as well as new routines and infrastructures. This is a huge challenge, as no country is currently achieving a high human development index while respecting planetary boundaries (O'Neill *et al.*, 2018). There is increasing awareness in climate research that closing the emission gap requires “far reaching and unprecedented changes in all aspects of society” (IPCC, 2018, p. 1). As a consequence, transformation has become an increasingly important term in overcoming contemporary unsustainability but “the how” is still vague. Transformative innovation has the potential to critically guide practice and support theory.

As we will elaborate, our definition of transformative innovation is context-sensitive. Whether a change is perceived as transformative and whether an action is seen as innovative depends on both an empirical analysis and a moral judgement. Therefore, transformative innovations are based on a conjunctural analysis as well as a specific concrete, and thereby context-sensitive, utopia. Thus, they require evaluating the effectiveness of different structurally constrained actions (Jessop, 2005, p. 48). This is a most complicated challenge for Europe and other Western and rich civilizations, as their modes of production and consumption are structurally the most unsustainable ones.

In this article, we distinguish and criticize different conceptualizations and link them to specific practices and policies, using a critical realist approach<sup>2</sup> to link abduction - the search for

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<sup>1</sup> A version of this paper will appear in *The Handbook of Critical Environmental Politics*, edited by Luigi Pellizzoni, Emanuele Leonardi and Viviana Asara (Cheltenham: Edward Elgar).

<sup>2</sup> Critical realism is a philosophy of science pioneered by Roy Bhaskar (1993), it has dialectical thinking at its core, acknowledges the presence of non-measurable and unobservable *potentials* within reality, and is primarily concerned with identifying *causal mechanisms* of phenomena to better explain reality, thus it stands between post-structuralism/post-modernism on the one-hand and positivism and empiricism on the other hand (Danermark *et al.*, 2005).

adequate concepts, to make sense of the here and now - to an empirical analysis of ongoing social-ecological transformations (Buch-Hansen and Nielsen, 2020).

In a first approximation, we define transformative innovations as innovations that contribute to transformations. Therefore, the article, structured in six sections, has to clarify the key concepts - innovation and transformation. It starts with a short history of innovation (section 2), followed by an overview of different strands of social innovation that contribute to sustainable transformations (section 3). Section 4 is about defining and systematizing transformative innovations and section 5 presents a contemporary transformative innovation based on a conjunctural analysis. Section 6 concludes.

## A SHORT HISTORY OF INNOVATION

In his extensive work on innovation Benoît Godin (Godin, 2015, p. 12) recorded over 500 definitions of “innovation”, acknowledging that innovation has permeated diverse discourses and disciplines. It has become “a trans-discursive term that everyone understands spontaneously” and a “central cultural value” (Godin and Gaglio, 2019, p. 2). Although positively connoted as a ‘panacea’, it has remained a rather vague concept, a “buzzword”.<sup>3</sup>

For long innovation was understood as opposing existing political and religious structures (Godin, 2015). Before the French Revolution, the term was used in political and religious texts by royalists to denounce revolutionaries and republicans as “innovators”, even forbidding innovation as a secular term for heresy (Godin, 2020). Outcomes of the “plague” innovation were perceived as negative and “dangerous” (Godin, 2012b, p. 99). In the 19<sup>th</sup> century, innovation gained a widely positive connotation, enlarging its meaning into the ‘social’. As progress, changing society and increasing individual freedoms, was seen as necessary to

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<sup>3</sup> For a detailed discussion of the polysemic, meaning-changing concept of innovation see Godin and Gaglio (2019, p. 3 ff).

improve living conditions, the new was increasingly appreciated. Human-made change became innovation (Godin, 2015). Republicans and democrats<sup>4</sup> turned its former negative connotation on its head. Moulaert et al. (2017) identifies the cradle of “social innovation” in this oppositional, thereby transformational use of the term by social movements and economic cooperatives (Martinelli, Moulaert and Gonzalez, 2010). Innovative practices and policies were strongly linked to the “social” sphere<sup>5</sup>.

Only after WWII ‘innovation’ shifted from the “social” to the “economic” sphere. ‘Technological innovation’ was now constructed, presented and seen as a “process” resulting in (novel) goods that can be commercialized, to highlight “the socioeconomic benefits of science” (Godin, 2006, p. 644). The focus on invention and technological progress spurred the vast use of the term innovation in business studies<sup>6</sup> as well as a profound change in the attitude of governments towards innovation. Technological innovation was increasingly embraced as crucial for legitimizing public policies. R&D investments ensured national competitiveness (e.g. in manufacturing) and social progress (e.g., in health). Thus, “technological innovation became an instrument of economic policy” (Godin, 2016, p. 547). Technological optimism, operating within a logic of “addition” and obsession with the “new”, insinuated that technological change solves socioeconomic problems. Building systems of innovation became the dominant policy framework, linking university and business in response to governance failure by promoting science hubs, clusters and meta-governance structures.

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<sup>4</sup> On the history of social innovation since 1830 see (Godin, 2012a).

<sup>5</sup> Godin (2016) describes the development of the term from being seen as invention in the arts towards the development of technological innovation. Examples of a broad use of the term are Thorstein Veblen, Simon Smith Kuznets, Alvin Hansen, Bernhard Stern and Joseph Schumpeter.

<sup>6</sup> For a discussion of the promotion of the “linear model of innovation” see Godin (2006); for the rediscovery of Schumpeter and understanding technological innovation as a process see Godin (2008) On a historiographic refutation of Schumpeter’s contribution to innovation see Godin (2012a); for a contestation of Schumpeter’s influence on evolutionary economics see for example Hodgson (1993); Fagerberg (2003).

Joseph Schumpeter distinguished innovation and invention, as “to carry any improvement into effect is a task entirely different from the inventing of it” (Schumpeter, 1934, p. 88). Innovation is a complex and systemic organizational process leading from invention to consumption. He undermined the dichotomy of old versus new by acknowledging that innovations are also new combination of existing concepts, of existing ways of doing things or of products. Both, past as well as current innovations influence future innovations (Fagerberg, 2018). Development always implies that the “old” will be replaced by novel forms and novel combinations. Therefore, Schumpeter coined the term “creative destruction”.

## SOCIAL INNOVATIONS FOR SUSTAINABLE TRANSFORMATIONS

For long, social innovations were oriented towards what is commonly called “social problems”, e.g., poverty or exclusion. In the 1960s, social innovation had a first renaissance in the context of the civil rights movements and rising social problems. Later, new policy fields and topics came up, like integrated urban development, solidarity economy and social entrepreneurship. We will focus on four important strands of social innovation that have all, over the last years, taken up environmental challenges: Mainstream social policies, sustainability transition research, the approach of Moulaert and colleagues and radical ecological alternatives (Moulaert, MacCallum and Hillier, 2013, pp. 15–17).

Following the Great Financial Crisis in 2008, social innovation became prominent in mainstream policymaking offering a cheap way of fighting exclusion without having to take on financial responsibility or undertaking institutional change (Oosterlynck et al., 2018). The Bureau of European Policy Advisers<sup>7</sup> (BEPA) defines social innovations as “innovations that are social both in their ends and in their means” and argues they are an effective way to

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<sup>7</sup> The EU Directorate-General and Think Tank was founded in 1989, restructured and renamed under respective Presidents of the European Commission; Barroso-named BEPA, Juncker-named European Political Strategy Centre (EPSC) and Inspire, Debate, Engage and Accelerate Action (I.D.E.A.) since 2019.

“empower people” and “drive societal change”. In this apparently pragmatic approach, social innovations empower consumers and introduce market mechanism in public service delivery, thereby reducing social innovation to a universal and homogenized recipe of fostering eco-social entrepreneurship and creating quasi-markets (Jenson, 2015, p. 101). Unger calls this the “minimalist” version of social innovation (Unger, 2015), as it creates an “enabling welfare state” which uses the creativity and personal commitment of citizens (BEPA, 2011, p. 7). Its slogan is “to do more with less and to do it better” (BEPA, 2014, p. 93). The emerging novel institutions, however, are neoliberal ones, commodifying social services and reinforcing the unsustainable logics of capitalist market economies, especially the growth imperative and consumerism. These and similar minimalist social innovations take “modesty for realism” (Unger, 2015, p. 236), often leading to “dull repetition” (Sum and Jessop, 2013, p. 133) of a cost-reducing optimization logic without changing the causes of social exclusion and ecological degradation. “To accept the present political and economic arrangements as the unsurpassable horizon within which the social innovation movement must act, is to reduce the movement to the job of putting a human face on an unreconstructed world” (Unger, 2015, p. 236).

Sustainability transition research, later institutionalized in STRN (sustainability transitions research network), investigates changing sociotechnical systems in a multi-level policy (MLP) analysis, where “technological and social innovations are frequently seen as enablers for transition processes”. Such innovations might “stretch and transform” sociotechnical systems, or merely “fit-and-conform” (Kivimaa *et al.*, 2021, p. 111). Innovation is sometimes focused on technological change (Köhler *et al.*, 2019), but often aiming at ‘system innovation’ to design policies and change user practices, infrastructures and industry structures (Geels, 2006). It investigates transition processes in which innovations are provided with different directions of development, “not all of which are sustainable”. Decisive is that these processes are “subject to democratic debate” (STRN, 2010). Protected niches are necessary for game-changing non-

regime actors, shielding it from mainstream pressures, enabling nurturing processes to develop path-breaking innovations. STRN research tends to focus on analyses of niches<sup>8</sup> and regimes, while being much weaker in specifying landscapes and analyzing structural change. The STRN and MLP research is further criticized for strongly focusing on markets and technology, thereby, operating in “unsustainable selection environments” in which entrepreneurs and consumers hardly design “transition mechanisms beyond the market” (Hausknot and Haas, 2019, p. 4).

In the STRN community, scholars have developed their own definition of transformative social innovation as a “process in which social relations, involving new ways of doing, organising, framing and/or knowing, challenge, alter and/or replace established (and/or dominant) institutions in a specific social-material context” (Haxel *et al.*, 2016, p. 22). Transformative social innovation “challenges, alters or replaces dominant institutions” (Avelino *et al.*, 2017, p. 1), perceiving climate change as a “game changer” (Campos *et al.*, 2016). This apparently non-normative approach offers a coherent framework for social innovation research, including efforts to operationalize power and landscape dynamics. It searches for new pathways and investigates selection processes and network evolution without defining *ex ante* whether these innovations are “good” or “bad”. Empirical research so far, however, has been severely restricted by focusing on social innovation initiatives in small-scale projects, like free internet access in the favela, timebanks or water supply programs. These initiatives, however, are dependent on a favorable political environment. To take an example: Many of these initiatives came up in Brazil in the framework of solidarity economy supported by a benevolent government (Gordon, 2007; Oosterlynck *et al.*, 2019). Under the current Bolsonaro government

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<sup>8</sup> In the STRN community, the terms niches, regimes and landscapes refer to different gradual and inter-related analytical units for transitions, with radical changes mostly blossoming on a niche-level, capable of rule-altering and inducing system-change by reaching the regime level and changing the ideologies and societal values on a landscape-level or receiving support by the latter (cf. STRN publications; Geels, Schot, Loorbach).



they face huge difficulties. Therefore, while valuable in themselves, niche initiatives cannot have a transformative impact without a systematic link to public authorities and multi-level actors – at least having a government that respects the boundaries of civil society spaces.

The transformative potential of social innovations has for long been investigated by a more political research community. According to Moulaert et al. (2017) social innovations are defined by (1) satisfying needs, (2) changing social relations and (3) collective empowerment (Moulaert and Van Dyck, 2013, p. 466; Moulaert *et al.*, 2017), rejecting the logic of “There is no alternative”. Innovative thinking is always also about reframing problems and, thereby, creating different “realities”, broadening the scope of the “possible”. “Maximalist” social innovations “are piecemeal and gradual in method but nevertheless radical in ambition” (Unger, 2015, p. 239). Due to structures of domination and exploitation which constrain different actors in different ways (Jessop, 2005), not all futures are possible. Creating here and now a context in which certain potentials can become actualized, enables exploring spaces of maneuver for empowering and emancipatory agency in adverse and conflict-ridden situations. Imaginaries, narratives, visions and concrete utopias are important elements of this type of social innovation (Novy, 2019).

A further characteristic of this strand of social innovation research is to better include vulnerable groups and individuals to various spheres of society by fostering individuals’ and communities’ empowerment and acceptance (Van den Broeck, Parra and Mehmood, 2019). Collective empowerment is crucial for grassroots innovations, empowering “access by the least powerful to the capacities for challenging power” (Stirling, 2014) and to challenge the directions of innovations that affect them (Mehmood and Imran, 2021). Therefore, such transformative social innovations require renewed democratic processes, “[to] impact and improve socio-political relations and democratic empowerment” (2021, p. 3). This is in line with grassroots innovations defined as “the capacity of people successfully to exploit a new idea or method and realize some

material and social effect”, which can present incremental, radical, or transformational changes to wider social life (Smith and Stirling, 2016). Such innovation is “*a negotiated political process of choice* between multiple pathways” and “a means to rise to the twin challenges of inclusive economic development and environmental sustainability” (Smith and Stirling, 2016, p. 2). Thus, departing from the focus of innovation on technology and science, Stirling and Smith echo earlier understandings of innovation as political and in response to (or promoting) societal change. They stress the potential of small-scale, local, place-based and democratically-determined innovations, contrasting it to top-down, corporate, market-centered, and/or technocratic innovation. Although sympathizing with bottom-up development, some proponents of this strand are aware of its limitations. Neither civic initiatives nor neighborhoods alone can save the city (Moulaert *et al.*, 2010), as they all too often fall into the localist trap or even foster institutional lock-ins (Kazepov, Colombo and Saruis, 2019). Therefore, bottom-linked initiatives and multi-level governance dynamics are important for socially innovative initiatives to turn into “maximalist social innovations” that criticize actualism, i.e., reducing the real to what exists at the moment, insisting on the openness of the world.

This is related to transformative ecological approaches which stress the visionary potential of innovations. Degrowth visions often focuses on radical social innovation from the bottom up (Liegey, Nelson and Hickel, 2020). Emphasizing the grassroots and local-level is, however, in danger of being caught in the above mentioned localist trap (Pansera and Owen, 2018; Ibrahim and Sarkis, 2020). A multi-scalar approach can overcome these shortcomings. “New narratives for innovation may include different perspectives and sources of knowledge, including heterodox economics, bio-economics, science and technology studies, and Post-Normal Science” (Strand *et al.*, 2018, p. 1849). This departs from the fetishization of small-scale and marginalized groups at the expense of other scalar considerations and the desirability/feasibility

of local innovations for systemic transformations. It opens the space for radical innovation(s) to happen at all levels, across fields and space.

As innovation is “creative destruction”, it includes exnovation which is not about implementing the (sustainable) new, but ending the (unsustainable) old. Exnovation is the underappreciated “variant” (Kropp, 2015, p. 1) or “sister” (Arnold *et al.*, 2015, p. 11) of innovation. This forecloses awareness that solutions not necessarily have to add or rearrange something, but instead might have to end something in certain circumstances. Exnovation focuses on abolishing unsustainable practices by replacing or removing options (Paech, 2005) by means of “purposive termination of existing (infra)structures, technologies, products and practices” (Heyen, Hermwille and Wehnert, 2017).<sup>9</sup> In sustainability studies the concern with “ending” by the phasing-out of non-sustainable practices has gained renewed interest over the last years. Technological innovations that improve point-value efficiency might lead to the co-existence of unsustainable practices or only marginally exnovated aspects with more sustainable ones. To cite an example: Introducing the KAT for combustion engines has not impeded the ongoing growth of the fossil-fuel driven automobile sector. Innovation policies should therefore include the managing of exnovations in technological but also social endeavors.

## DEFINING AND SYSTEMATIZING TRANSFORMATIVE INNOVATION

Being able to identify innovations that contribute to transformations requires adequately conceptualizing transformations. In this section, we will first distinguish the analytical from the normative use of the term transformation, then distinguish long-term and short-term transformations, then showing the importance of balancing progress and preservation in a novel way, acknowledging the dangers of progressively transgressing planetary boundaries. Finally,

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<sup>9</sup> Exnovation is defined as the act of intentionally stopping unsustainable practices, structures and modes of production and consumption, instead of continuing, accepting and trusting phase-outs or creative destruction as a ‘variant’ (cf. Kropp, 2015) of innovation. It counters innovations’ often inherent idea of accumulation and addition.

the section dwells on the dialectics of transformative innovation. Based on these conceptual considerations, we end the section by defining transformative innovation as innovations that contribute to those transformations that are desirable and feasible in a specific conjuncture.

### *Transformations: Analytical and Normative*

There are two ways to employ the term transformation: First an analytical one, which describes ongoing changes to society-nature relations, describing a process. Second a normative one, exploring *desired* social-ecological transformations, referring to specific changes in society-nature relations based on deliberation and moral judgement.

The analysis of contemporary changes exposes multiple dimensions of the contemporary crises. The rise of Asia is perceived in the West as decline and loss of power, new forms of right-wing extremism emerge in the Global North and South, digitalization and precarious labor conditions create new forms of inequality and uneven development, and reinforce and transform old ones. Current capital-dominated society-nature relationships undermine the potential for climate-friendly living by destroying the bio-physical conditions of the human-friendly Holocene, thereby, making human civilizations “as we know them” untenable.

Thus, in the current turmoil the question is not whether profound changes will take place, since this is undoubtedly occurring. Rather, the question we focus on, and is pertinent for addressing the crises of the 21<sup>st</sup> century, is which dimensions of the socio-economic system and biophysical conditions will change and in which respect (Brie, 2014; Brand, 2016). Furthermore, it is open *how* this change will happen – in a chaotic way, as we are currently experiencing in dealing with a pandemic, or shaped by human agency, social mobilization, experimentation, and planning.

Transformation refers to “change in form or shape” (Scoones, Leach and Newell, 2015; Linnér and Wibeck, 2019, p. 25)<sup>10</sup>. Transformation research is aware of the structural conditioning of ongoing attempts to change practices and policies. Its focus on profound changes goes hand in hand with a normative aspiration to shape more equal and sustainable society-nature relationships. However, policymakers tend to underestimate the power of sustaining domination and exploitation via top-down policies (Brand, Görg and Wissen, 2019), while activists stressing horizontal relations of commoning tend to exaggerate the potential of bottom-up niches (Exner, Kumnig and Hochleithner, 2020; Liegey, Nelson and Hickel, 2020), both avoiding a robust analysis of short-term development, its potentials and limitations.

This has implications for normative conceptualization. Our objective for the social-ecological transformation is the good life for all (Novy, 2013, 2014)<sup>11</sup> within planetary boundaries (O’Neill *et al.*, 2018). This objective is shared by the Sustainable Development Goals (SDGs). Although profoundly contradictory (Nogueira, 2019), they aim at a form of global governance based on inclusive and sustainable provision of basic goods and services for all. However, not to live at the cost of others and to overcome the “imperial mode of living” (Brand and Wissen, 2017) is more. It is a concrete utopia that is, in line with Ernst Bloch (1959) and Roy Bhaskar (1993), not wishful thinking – neither of global bureaucrats nor of grassroots activists. Such a utopia for a solidaristic mode of living is concrete in the sense of “well rounded and appropriate for the purposes at hand” (Hartwig, 2007, p. 74 ff). It is based on a theoretical critique of endism - “There exist alternatives to contemporary capitalism” – as well as on lived experiences of alternatives, from the commons movement to welfare institutions. The concrete utopia of a good life for all within planetary boundaries is a contemporary context-sensitive actualization of

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<sup>10</sup> Transition is a related concept (Stirling, 2015), rooted in the notion of a passage, “going across” from one state to another.

<sup>11</sup> See transdisciplinary efforts stimulated by two congresses in Vienna: <http://guteslebenfueralle.org/en/home.html>.

*eudaimonia*, “human happiness and flourishing” (Hartwig, 2007, p. 187 ff). In section 5, we will propose a concrete strategy in line with this concrete utopia.

### *Transformations: Long-Term and Short-Term*

Karl Polanyi helps to understand that temporality is crucial in understanding processes of transformation. His analysis in “The Great Transformation. The Political and Economic Origins of Our Time” (Polanyi, 2001) is not restricted – as is often insinuated in referring to Polanyi – to the long-term transformation towards an industrialized market society, but aims at better understanding the conjuncture of the post-war order after the defeat of fascism in the 1940s. Polanyi distinguished *transformation as a metamorphosis*, an evolutionary process of long-term change, and *transformation as a certain political-economic moment of radical rupture*, a specific conjuncture characterized by severe contradictions that might lead to abrupt political changes, revolutions.

Building on Polanyi’s distinction, today the most important transformation as a long-term “metamorphosis” (Polanyi 2001, p. 44) is social-ecological transformation with the climate crisis and the trespassing of other planetary boundaries at its core (Rockström *et al.*, 2009; Steffen *et al.*, 2015), making the shift to decarbonized “sociometabolic regimes” an urgent task (Haberl *et al.*, 2011).

There is, however, confusion with respect to Polanyi’s “great transformation”, as Polanyi reserves the term “great transformation” to short-term political changes in “our time”, like fascism and the New Deal in the 1930s (Novy, 2020). Unlike most of transformation research, including most of those based on Polanyi, Polanyi had a profound interest in short-term transformations and political agency. In the 1930s, he identified a general shift away from universal and liberal ideologies and a spatial shift away from what he called universal capitalism towards nationalism and regionalism (Polanyi, 1945). According to him, this politico-spatial turn was the consequence of the unwillingness of the liberal mainstream to implement social

reforms. In analogy, it is important to interrogate how long-term and short-term dynamics interact today (cf. section 5).

### *Balancing Progress and Preservation*

Transformation is not a linear process, a teleological development, necessarily progressing towards a good end-state, *eudaimonia*. The future might be worse than the present. Given the threat to the ecological base of a dignified and civilized life posed by consumerism, the growth imperative and authoritarianism, progressive thought has to be linked to concerns for conservation. In the current conjuncture, a new chapter in the long history of innovation navigating between progress and tradition has to be opened. Left-wing politics is not necessarily progressive, nor is the conservation of biophysical and sociocultural systems necessarily reactionary. Defending traditional forms of life, not only of indigenous populations, might be as important as progressive struggles for emancipation. And both, traditionalists defending life forms and progressives struggling for individual autonomy, might become reactionary, if they sustain the non-sustainable (Blühdorn, 2013). Therefore, the discursive field of innovation itself has to be re-framed, overcoming the assumption that new ways forward are the principal solution. It does not come as a surprise that the critique of growth has led to increased interest in exnovation. Thus, transformative innovation must take seriously the role of disruption and rupturing change on the one-hand and also preservation and exnovations on the other hand. Given the acceleration of the climate crisis, democratically deliberating on limiting destructive practices will become increasingly crucial. This complicates political action, as it is much easier to add a sustainable practice to available options than to erase one of the existing options. Therefore, transformative innovations have to focus on economic zones that are crucial for human flourishing and wellbeing.

### *Transformative Realism: The Dialectics of Transformative Innovations*

Radical thinking has to re-link micro and macro-changes in a systematic way. This requires a dialectical way of reasoning and acting which has been part of progressive thought for long. It was called “revolutionary Realpolitik” (Luxemburg, 1903; Haug, 2007), non-reformist reforms (Gorz, 1968) or double transformation (Klein, 2014). All these concepts link short-term agency with long-term change, pragmatic compromising with revolutionary zeal, always aware that one has to strike the balance between these dialectical moments. Transformative innovations are context-sensitive actions to promote a transformative vision for long-term change, a concrete utopia, by means of feasible short-term steps. They are a way forward towards more radical, disruptive change with an awareness for the necessity of incremental actions. In line with the concrete utopia of a good life for all within planetary boundaries, transformative innovations open the horizon beyond capitalism, while protecting existing habitats and local ways of life against marketization here and now.

Such visioning combined with the search for concrete solutions provides guidance for “critical problem-solving” (Eckersley, 2020, p. 3), reform strategies of systemic change that are effective in the short-term. This helps avoiding the dualism of opposing small steps within the existing order to major advances of radical change (Novy, 2014, p. 5). Structure-aware agency valorizes effective pragmatic first steps of critical problem-solving in direction of radical change foreshadowing a different future. “Such steps are moves in the penumbra of the ‘adjacent possible’ surrounding every state of affairs: the ‘theres’ to which we can get from here, from where we are now, with the materials at hand. [...] Only because the piecemeal can be the structural can the social innovation movement do its work.” (Unger, 2015, p. 242). But piecemeal must not be confounded with bottom-up or project-centered, favorites of current social innovation and utopian thinking. In the current conjuncture this means collective action, political alliance building to institutionalize social-ecological infrastructures. This puts the



directive yet democratic design of provisioning systems to satisfy basic human needs at center stage.

### *Defining Transformative Innovation*

Based on the conceptual considerations outlined in this section and returning to our preliminary definition of transformative innovation as innovations that contribute to those transformations that are desirable and feasible in a specific conjuncture, we will expand on ‘desirable’ and ‘feasible’.

Transformative innovations must be desirable in the sense of the normative usage of social-ecological transformation, in line with the considerations outlined in section 4.1. Additionally, and highly relevant for conceptualizing transformative innovation, is balancing the contradictory change dynamics of innovation, exnovation and preservation as described in section 4.3. Transformative innovations must be *feasible*, which may be obvious, but it is in fact a valuable contribution of our conceptualization, bridging the gap and linking desired transformative change with the here and now by acknowledging “distinctive spatio-temporal selectivities of structures” and “differential spatio-temporal ... action capacities” (Jessop, 2005, p. 49). This understanding of *feasible* draws on Jessop’s strategic-relational approach and aims at expanding the room for maneuver, and balancing an understanding of action that is neither restrictive nor unlimited. For transformative innovation, this implies exploring contemporary potentials for collective agency by linking long-term and short-term transformations (section 4.2) as well as linking planetary responsibility to local potentials here and now (section 4.4).

Thus, this puts linking long-term environmental issues to burdensome short-term needs at the core of contemporary transformative innovations, which will be explored further in the next section where a promising transformative innovation in the current conjuncture is explored.

## TRANSFORMATIVE INNOVATION IN THE CURRENT CONJUNCTURE

In this section we propose a specific type of transformative innovation that is convincing in the current conjuncture. We start with a conjunctural analysis, a “critical method approaching transition tensions” introduced by Eckersley (2020). Then, through relating the social-ecological transformation to other ongoing transformations we sketch the need for collective and political actions to foster transformative innovations. Finally, by combining long-term analyses of transformations with a conjunctural analysis, we propose sustainable and inclusive provisioning systems as the most relevant type of transformative innovation.

### *Conjunctural Analysis*

Short-term analysis of potentials and dangers must not impede agency towards long-term transformation. In line with Eckersley (2020, p. 12ff) we propose “critical problem solving” as the most promising entry point for transformative innovations. A “conjunctural analysis” (Eckersley, 2020, p. 11) is the analysis of the here and now, the specific junction of certain spatio-temporal dynamics, of long-term and short-term transformations. A conjunctural analysis investigates how contradictory politico-economic dynamics, accumulation strategies, regulation efforts and civil society mobilizations merge in a “moment of condensation” (Clarke, 2010 in Eckersley 2020, p. 10).

Contemporary conjuncture has certain similarities, and profound differences to the 1930s, analysed by Polanyi. Different is not only the urgency of the social-ecological challenges, but the geopolitical constellation with the rise of China and a much more profound challenging of Western hegemony. This goes hand in hand with a crisis of democracy and social cohesion in the West. Similar are processes of commodification, currently in the form of neoliberalism. And, current transformations take again place in a contradictory conjuncture of an emerging anti-liberal and anti-globalist turn. In the West, the dominance of neoliberalism is challenged by a diversity of actors (critical environmentalists, socialists, but also economic populists on

the Right). And again, right-wing extremism is linked to ideals of white supremacy (Novy, 2020). Effective power strategies towards inclusion and sustainability need concepts and practices that are not only radical and transformative, in accordance with the scope of the crises, but also nuanced, strategic, and thus place-based and context-sensitive.

There is a strong popular appeal of conservative values, reinforced by the pandemic. New forms of nationalistic capitalism combine anti-liberal and anti-democratic politics with neoliberal economic policies reinforcing inequalities and insecurity. These regressive political dynamics tend to undermine key pillars of liberal democracy and social cohesion, accelerate climate crisis and repress grassroots alternatives. Prioritizing long-term climate issues at the cost of ignoring these short-term challenges leads to resistance that is easily instrumentalized by the reactionary Right (Bärnthaler, Novy and Stadelmann, 2020). It uses climate-skepticism to wage a cultural war defending the car, meat consumption and, in general, the accustomed way of life. Transformative innovations have to offer short-term and long-term answers to these supremacist movements.

### *Collective and Political Action to Foster Transformative Innovations*

Contemporary social-ecological changes are long-term changes, while simultaneously society is facing urgent short-term changes, e.g., the rise of climate-skepticism in the extreme-right or the annihilation of minority rights in illiberal democracies. To evaluate types of innovation requires a systematic analysis of potentials and dangers inherent in the current transformation. Depending on specific situations in which short-term transformations take place<sup>12</sup>, current transformations offer diverse potentialities for social-ecological agency. Better understanding them helps the “reflexive transformation of structure by agency” (Sum & Jessop, 2013, p. 49).

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<sup>12</sup> We base our argument strongly on Eckersley (2020) as her concepts of “conjunctural analysis” and “critical problem-solving” are inspiring for our approach to transformative innovations. However, she confounds Polanyian terminology by calling for a “green great transformation“.

To respect planetary boundaries requires a comprehensive societal reorganization, breaking with current unsustainable modes of living and working as well as revisiting old(er) practices. This needs agency that does not disrespect incremental changes nor the introduction of new products, novel processes, and practices – like re-usable shopping bags or car sharing initiatives. However, it identifies incremental change as deficient. There is an urgent need of long-term changes of basic capitalist forms (of commodification, privatization, ...), of modes of living, eating, working and of whole provision systems, be it mobility or energy. Such innovative and transformative agency has to include innovation's often overlooked side of exnovation to end unsustainable practices. It needs collective action and political agency to articulate different transformative attempts. This will lead to conflicts and resistance to change. The art of politics in this conjuncture has to acknowledge the necessity of a new balance of progress and preservation, prioritizing the need for protection to sustain existential provision.

Therefore, transformative agency has to be political agency in a broad sense, mobilizing resistance and building alliances. Cooperation with the like-minded in domination-free settings is a social skill that has been given huge importance by social innovation research and practice – be it Local Agenda 21 or the broad diversity of self-organized and entrepreneurial initiatives, like food cooperatives and the commons (Exner, Kumnig and Hochleithner, 2020). It does not help, however, to solve conflicts with antagonistic forces that do not share the same moral judgements – e.g. with respect to the urgency of the climate crisis. More important, but also more ambitious than performativity with its high moral code in communities of like-minded, is alliance building with different cultural milieus and social groups that live according to other moral codes (Haidt, 2012) and prioritize other objectives than environmental ones. Effective agency in the given conjuncture requires distinguishing between allies, opponents, and enemies (Mouffe, 2005) – a capacity that has suffered from decade-long disinterest in political agency, denounced as dirty and easily coopted. It is to be expected that after the end of the Covid-

pandemic, social protection, a secure job and affordable costs of living will become even more important. This might empower reactionary politics that combine neoliberalism with sustaining pillars of the national welfare state. Not acknowledging this, will lead to electoral defeats and severe backlashes for climate politics.

### *Sustainable and Inclusive Provisioning Systems*

The best way to overcome the resistance against climate-friendly actions is effectively linking long-term environmental needs, like sustaining biodiversity, and burdensome short-term needs, like unemployment, exclusion or heat waves. In times of turmoil, this offers forms of protection that differ from current reactionary strategies of exclusion and widespread re-affirmation of capitalist market solutions. Even in capitalist societies, there are economic zones that are not dominated by capitalist logic – e.g., the household and parts of the provisioning system in general. Therefore, contemporary struggles might be defensive as well. These zones are functional to reproducing labor power, but do not function as a market economy. Examples are public pension systems or municipal enterprises. Strengthening these economic zones enables linking the protection of biodiversity and the reduction of CO<sub>2</sub>-emissions with social protection measures that reduce the cost of living and, thereby, enables the satisfaction of basic needs (Buch-Hansen and Koch, 2019). Such sustainable provisioning systems are privileged sites for transformative innovations, as they shift the focus from exchange to use values, foster the satisfaction of needs without consuming commodities and classify economic zones that do not contribute to basic provisioning as secondary.

Today, resource-intensive individual consumption via markets structured by large corporations is the dominant model in food systems as well as in car-dependent mobility systems. Transformative innovations have to initiate the transition to less-resource intensive and more inclusive collective provision systems. This must not be limited to state provision via nationalization or a centralized welfare state. Care, health and energy can be provided by

intermediary institutions as well, be it cooperatives, the third sector or municipal enterprises. The Foundational Economy Collective (2018) has even proposed a social licensing system for ongoing private provision, e.g. in retailing by supermarkets. Market access for large corporations is traded for social contributions of the company to the locality and public wellbeing – e.g. a public kindergarten or recreational area. It is widely acknowledged that transformative innovations have to search for alternative provision systems that satisfy basic needs with less resource use (O'Neill *et al.*, 2018). Alternatives to the imperial mode of living currently exist at the margins and in niches, but effective strategies for generalizing these practices and ways of being have not yet taken root.

Infrastructural configurations regulate access and quality of foundational goods and services, e.g., via rent control, subsidies and zoning regulations. They frame the individual choice architecture: bicycle lanes or motorways, local markets or shopping malls, free access to the internet or big-data controlled social media. Public authorities are crucial for providing these provisioning systems. But reducing the political to state agency depoliticizes all efforts to democratize the social-ecological transformation. Dialectical reasoning widens the meaning of the political, stressing the civic-public interplay (Novy, Trippel and Vilker, 2005; Asara, 2019). Grassroots initiatives of social movements can be steps towards effective state interventions (e.g., a Green New Deal) that help to generalize alternative forms of production and living (e.g., by prohibiting combustion engines or expelling cars from city centers). Therefore, the state, its legislative and tax-collecting power, remains crucial for effective implementation, while civil society is crucial for social mobilization and preparing the ground, offering narratives, and challenging power relations.

Economic zones that do not reproduce these climate-inimical logics and practices must be strengthened to overcome the destructive logics of consumerism, endless competition and the growth imperative. The Foundational Economy Collective (2018, 2020) promotes the

strengthening of the foundational economy, the economy of everyday activities to sustain a dignified life. This is in itself transformative and innovative, as it offers important criteria for climate-friendly policymaking. Distinguishing the foundational from the tradeable zone, it offers criteria for those sectors which – due to their high externalities (transport costs due to resource-intensive global supply chains; resource waste of individual consumption goods, obsolescence, ...) have to shrink to achieve climate targets and those zones, that have to be reorganized (and might even grow), that guarantee a good life by satisfying basic needs – often organized locally or regionally (Krisch *et al.*, 2020; Schafran, Smith and Hall, 2020).

To build sustainable and inclusive provisioning systems for health, education, housing, energy, care and mobility is a decisive transformative innovation, an innovation that depends on political agency and political decisions that prioritize the provisioning of foundational goods and services. What is needed are more sustainable and inclusive “choice architectures” (Gough, 2017, p. 158) that offer plural forms of collective provisioning favouring the satisfaction of basic needs as well as climate change mitigation. Deep changes, as those expected to happen in the current transformations, will lead to conflicts, increasing societal cleavages and reinforcing territorial competition. To implement such policies will encounter fierce resistance not only from dominant and vested interests (Geels, 2014; Hausknost and Haas, 2019), but also from the working and middle classes (Blühdorn, 2019). Although the freedom to choose is valuable, in combatting the Covid-19 pandemics, public policies imposed severe restraints on choice and individual preferences. Transformational social-ecological actions and innovations will as well have to strike the balance between individual freedom and collective and intergenerational needs.

## CONCLUSION

This article has developed a proper definition of transformative innovation. To our understanding, this is a unique definition, that best mobilizes the potential of innovations for

social-ecological transformation. This definition acknowledges a dialectical understanding of transformation, challenges binary understandings of innovation, and emphasizes that desired changes must be feasible in the current time-space specific conjuncture. Key in the current conjuncture is exploring innovative policies, practices and infrastructure that link long term environmental issues with short term burdens. This implies focusing on strategies that can have transformative consequences but will likely require alliance building beyond like-minded actors to expand the room for maneuver without reducing feasible to merely that which is do-able. Thus, strengthening sustainable and inclusive provision systems might be the most transformative innovation in the current conjuncture, upholding a radically ambitious understanding of what is desired while acknowledging the possibility for collective political action in the here and now.



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