

Review

# Work and Social-Ecological Transitions: A Critical Review of Five Contrasting Approaches

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**Abstract:** Going to work has become such a ritualized activity for the modern human that few people challenge its relevance from a sustainability perspective. Since the Industrial Revolution, the prospect of unlimited growth with the aim of jobs creation has been dramatically associated with a massive social-ecological degradation that puts the Earth system at risk. In recent decades, a number of heterodox theories and policies are reconsidering our relationship with work in view of contemporaneous social-ecological challenges. This paper offers critical review of five contrasting approaches. Those promoting ‘green jobs’ consider the possibility of transforming ecological constraints into economic opportunities by incentivising eco-efficient innovations and generating new jobs. Conversely, critical approaches, such as working-time reduction (WTR), labour environmentalism, political ecology of work, and contributive economy and justice, defend decommodifying work to liberate pro-social and pro-environmental behaviours. We additionally present two opposing scenarios mainly inspired by critical theories. One illustrates the root causes of systemic lock-in leading to the present social-ecological work-life degradation, while the other illustrates perspectives on the ‘politics of free time’ and contributive economy and justice oriented towards building capabilities, and workers’ emancipation and justice in search for more sustainable relationships with ecosystems.

**Keywords:** political ecology of work; working-time reduction; social-ecological transition; labour environmentalism; green job; contributive economy; contributive justice; sustainable work; decommodification of work

## 1. Introduction: The Globalised Crises of Work and the Environment

In the last few decades, the dominant model of economic development promoting unlimited growth and endless consumption has been radically challenged by those raising concerns about the limited bearing capacity of our planet [1–3]. Ironically, the excessive production of goods and services is destroying the ‘work’ done by natural ecosystems, which helps fulfil humans’ fundamental needs. Human work can be conceptualised as a set of culturally defined perceptions, institutions and practices and as an interface across social and ecological systems. Scholars from different backgrounds increasingly share the idea that ecological degradations could be better addressed by reconsidering the role of work in link with a necessary social-ecological transition. By transition we mean a “fundamental social, technological, institutional and economic change from one societal regime or dynamic equilibrium to another” ([4], p.1). Alternatively, this also includes the idea of transformation which refers to a “fundamental shifts in human and environmental interactions and feedbacks” ([4] p.1, [5]). Research on work and social-ecological transition contribute to raise concern about the social and ecological incoherence of our modern conception of work and help us engaging in

an ideological and practical reconstruction of the notion. Growing evidence encourage us to follow this trend.

The promise of unlimited growth and its trickle-down effects on workers' employment and wellbeing have been irremediably broken [3,6–10]. The so-called 'end of work' is modern capitalism's fundamental contradiction with businesses endlessly seeking productivity gains by reducing the need for human work, replacing people with technologies or delocalising production in low-wage developing countries, while simultaneously pretending that it will provide employment to the majority [11]. Modern capitalism progressively extends the frontiers of work commodification by controlling new sectors of social life, such as care, 'affective labour' and ecosystem management with social and ecological undesirable consequences [12].

On a global scale, the delocalisation of production in developing countries, attracted by weak regulations, cheaper labour and raw materials, raises concerns about environmental and social (in)justice and the displacement of negative externalities in vulnerable social-ecological systems [13–16]. Chinese manual pollinators in the Sichuan province is an iconic image that should draw our attention to above cited fundamental contradictions and the close relationships between work, social justice and ecological degradation, in which poor workers are often the first to bear environmental costs [17,18]. The precarious conditions of unemployed people and the working poor all around the world are becoming increasingly dependent on distributive policies and what James Ferguson has identified as a range of 'distributive labour' activities or survival activities that significantly differ from the dominant conception of productive labour [8]. In Western countries, a huge share of pointless so-called 'bullshit jobs' are maintained to keep people occupied and justify social hierarchies [19]. In developing countries, billions of people are forced to 'bricolage strategies' to capture little revenue far from the classical definition of work as employment [20]. These alternative ways of working, which are strongly rooted in local solidarity networks that combine multiple activities and often use recyclable materials, suggest another conception of the relationship between work, economy and ecology closer to a post-growth perspective [21–23]. The dominant view that income, wealth and, more generally, wellbeing are linearly proportional to an individual's propensity to work is increasingly contested.

This paper presents a critical review of some core theories and policies responding to the current double social and environmental crisis in link with the modern conception of work. It follows a political ecology perspective to critically discuss those approaches and propose some lines of thought towards sustainable transitions and transformations.

## 2. Materials and Methods

Using a traditional review method [24], this paper proposes a classification of five core theoretical approaches (Table 1). Throughout the proposed approaches, I attempted to respond to the following questions: What core theoretical positions allow us to better understand the complex relationship between work and social-ecological transitions? How do socio-economic inequalities and power relations determine the extent to which work can participate in socially constructed social and ecological transition pathways? What types of policies and socio-economic transformations could help reconfigure the place and role of work toward social-ecological transitions? Each papers' section provides a critical presentation of one of the following approaches: 1. green job; 2. working-time reduction (WTR); 3. labour environmentalism; 4. André Gorz's political ecology of work and free time; and 5. contributive economy and justice. In the last two sections (4 and 5), we present opposite scenarios: one illustrates the root causes of the current lock-in system and, the other, the potential of a paradigm shift to contributive economy and justice. Table 1 gives a brief overview of those approaches, their main assumptions, and suggested ways of changing the *modi operandi* as well as some of their limits.

**Table 1.** Core theoretical perspectives to help conceptualise work and social-ecological transitions.

Approaches	Main Assumptions	Modi Operandi	Limits
Green jobs	Environmental challenges can be valorised for their innovation and employment. potential. Eco-efficiency can become a factor of job creation and sustainable growth.	Technical progress and appropriate environmental legislation are required to create and support green jobs.	Growth remains a leitmotiv. Rebound effect on further production and consumption. Green capitalism can emerge.
Working-time reduction (WTR)	Reducing working-time can save energy and incentivise pro-environmental behaviour while providing a better work-life quality.	National WTR policies: i.e., early retirement, reorganising working-time during employment, three-day weekends, reduced workdays, increased holidays. A universal basic income can be used to reduce labour market pressure on workers and help them finding more fulfilling activities.	Rebound effect on leisure activities. Redistribution of work across society do not reduce environmental impact. Wealthy households can afford to work less, not the working poor leading to social inequalities.
Labour environmentalism	Work is a particular space to defend and advocate pro-environmental values and to achieve social and environmental justice.	Workers' mobilisation and unions plays the role of a powerful political instrument for defending pro-environmental values and just transition.	Workers and unions are often restricted by corporate interests and the requirements of the market economy. Work remains a universal category.
André Gorz's political ecology of work and free time	There is a need to create mechanisms of resistance to the capitalist system and its capacity to control labour, consumption and environmental degradation.	Free time should be included as a target in the economic model to support people's economic and political autonomy, increase their capabilities and their capacity for social and ecological innovations.	The reduction of tedious work and the generalisation of free time remain dependent from the use of fossil fuel energy.
Contributive economy and justice	Contributive economy exists on the margin of market economy based on the intrinsically motivated contribution of people to the creation of collective social-ecological values.	A combination of several policy instruments, such as WTR, basic incomes and contributive justice standards, promotes a decommodification of work and incentivises self-generated social-ecological innovations.	Contributive economy can hardly become independent from capitalist economy. New metrics and reciprocity interfaces are still missing to support contributive economy

### 3. A Critical Review of Five Theoretical and Policy Perspectives Combining Work and Social-Ecological Transitions

#### 3.1. Green Economy and Green Jobs: Eco-Efficiency as a Solution to the Social-Ecological Crisis?

The green economy concept was introduced in the 1980s to promote combining environmental legislations with techno-productive innovations in order to find solutions to the growing environmental crisis without contradicting the dominant paradigm of growth. A core idea of the green economy is that transitioning to more ecologically efficient production can create economic opportunities by fostering technical innovations, such as renewable energy and low-carbon technologies, and therefore can be compatible with growth and job creation [25]. *Blueprint for a Green Economy*, also called the ‘Pearce report’ [26], is considered the first and main green economy manifesto. It proposes the notion of natural capital and defends the necessity of internalising the negative environmental impacts of production activities (also called externalities) in the economy. Two decades later, in 2006, the Stern and The Economics of Ecosystems and Biodiversity (TEEB) reports proposed practical applications in the ‘real economy’ by developing a concrete instrument to price nature in order to attract economic operators and policymakers [27,28]. During the 1992 Rio+20 summit, the concept of green economy was the object of opposition between industrialised and developing countries. The latter defended the idea that green economic policies should not prevent economic development and that governments should remain focused on fighting poverty and inequality first. Among civil society, the International Trade Union Confederation (ITUC) was one of the organisations that was most attracted by the potential to create green jobs, while other grassroots organisations condemned the risk of ‘greenwashing’ or commodifying living entities [25].

Since Rio+20, the creation of green jobs has been a main argument supporting the development of green economy and has gained attention and support from several international organisations. In 2008, the United Nations Environment Programme (UNEP) launched the Green Economy Initiative (GEI) to promote investment in low-carbon sectors such as energy efficiency, sustainable transport technologies, natural infrastructures (forest, water, soil, etc.) and sustainable agriculture [29]. As part of the same initiative, the International Labour Organisation (ILO), in partnership with UNEP, ITUC and the International Organization of Employers, started the Green Job Initiative and published numerous technical and policy reports. In the most recent ILO report, green jobs were defined as jobs that ‘reduce the consumption of energy and raw materials, limit greenhouse gas emissions, minimize waste and pollution, protect and restore ecosystems and enable enterprises and communities to adapt to climate change’ ([30], p. 53). Most ILO reports propose a number of measures to facilitate a reconciliation between more efficient environmental technologies and policies and the creation of ‘decent’ green jobs. For example, governments and international organisations should agree on supporting a ‘just transition’, decent job creation and environmental corporate responsibility arrangements. According to a recent ILO estimate, six million jobs will be lost but 24 million will be created by 2030 due to ecological transitions in several sectors such as circular economy, energy transition or blue economy [30]. The concept of green jobs is based on the need to create jobs and a vision of technical progress [31], ecological efficiency and an idealistic approach to cooperation among states and business enterprises.

If several researchers have proposed specific technical and institutional contributions to improve the green job initiative [31–36], the approach has also been strongly criticised by a number of prominent scholars [37–40]. Although the approach favours states’ soft interventions to ‘correct’ market irregularities, it does not sufficiently challenge the ideal of capitalist accumulation inherent in the current neoliberal system. The proposed model of eco-efficiency is based on the assumption that some technologies can be cleaner than others, and it does not fundamentally question the productivity/consumerism model of development and its underlying institutions. A number of contradictions are also inherent in the model. Empirical research has shown that environmental efficiency could be positively correlated with increased labour productivity and, therefore, associated with a decrease in potential job creation in a given sector [41]. The Jevons paradox combines the

perverse rebound effect of technological eco-efficiency with more consumption, production and ecological degradation [42]. In addition, although ILO's idea of decent green jobs involves better work-life conditions, it does not sufficiently question the necessity of working more and creating new employment without examining the meaning of our activities. Critics support the idea of creating employment through technical innovation but argue that those policies should be combined with other measures to achieve slow growth, reduced pressure on labour productivity, the development of zero-emissions sectors and 'green service' activities to ensure sustainability [43]. It is undeniable that environmental challenges require appropriate technical innovations. However, appropriate policies as well as well-informed civil society organisations should prevent such innovations to be captured by global capitalist interests and be associated to additional pressures on worker's life quality.

### 3.2. *The Ecological Promise of Working-Time Reduction (WTR)*

A radically opposite perspective is promoted by those defending WTR. This idea arose due to the inherent contradictions between working too much to facilitate unnecessary consumption and the negative effects of a lack of free time and the environmental degradation on people's quality of life [44]. Reducing working-time is proposed as a simple way to reduce the negative environmental impact of excessive production activities while improving people's quality of life. It is also associated to an ideal of redistribution of working-time across society [45]. Work sharing and WTR can be achieved by early retirement (reducing the total length of people's working lives) or reorganising working-time during employment, i.e., three-day weekends, reduced workdays, increased holidays [46]. Issues related to funding WTR are complex. Some options have been proposed, such as voluntarily trading income for time, or financial incentives to gain workers' support, including a universal basic income or extended pension schemes [47]. Adoption of WTR depends on multiple factors, including cultural preferences, social norms, incomes and consumption patterns [48].

The idea is appealing and coherent, but its potential and real effects on ecological and economic processes are still difficult to estimate and controversial. Recent research has tried to assess the ecological impacts of WTR. Most researchers agree that there is a correlation between reducing working hours and a reduction of energy consumption. For example, some studies of The Organisation for Economic Co-operation and Development (OECD) countries show that shorter working hours lead to lower carbon emissions and a lower ecological footprint [49,50]. Such trends were observed in the US from 2007–2013 [51] and in the EU from 1970–2010 [52], although covariates such as attitudes towards the environment, age, level of education, household income and the presence of young children were shown to be major factors affecting ecological impacts [53]. A core distinction must be made between the effects of income reductions, i.e., reductions in households' consumption capacities and the effects of households having more free time [54]. For example, a study in Sweden highlighted that the correlation between green gas emissions and WTR was due to a reduction of income and not more free time [55]. In addition, environmental justice and equity must be considered to understand who will bear the costs and benefits of WTR. For some social groups, working less means becoming more economically and socially vulnerable [56]. Other questions relate to the compositional effect of free time, which can lead to various types of time allocation and consumption activities with completely different ecological impacts (traveling by car vs. train, type of leisure activities, etc.) [49,57,58]. In some cases, increasing leisure time is related to an increase in materialistic consumption [59]. Therefore, negative 'rebound effects', i.e., a reduction of the expected benefits of WTR due to systemic responses, can be expected from the recomposition of time and consumption activities [49,60]. WTR can be a factor in greater engagement in environmentally and socially positive activities and increased life satisfaction in spite of the potential loss of income [61]. Further explorations are required on the comparative social and environmental outcomes of alternative way of working, such as working from home allowed by the information technologies.

These mixed empirical findings support the idea that a slight and linear reduction of working time is not sufficient to guarantee a transformation of humans' relationship with ecosystems, as free time can be

reallocated to a variety of activities that do not necessarily positively affect the environment. The motives behind WTR are fundamental to lead to an effective negative ecological impact reduction [62]. Moreover, considered independently of other sustainable policies, WTR does not automatically change economic activities' orientation, goals or purposes to address environmental and social ethical concerns [45]. As argued by Françoise Gollain, 'a policy of working-time reduction would make sense only if it would favor the emergence of an anti-consumption culture' ([63], p. 212). In other words, to reduce the negative social and ecological effects of the current techno-productive capitalist system, not only is a reduction and better distribution of working hours needed, but also a profound transformation in the relationship between value production activities, culturally defined consumption patterns, environmental awareness and political engagement [64,65].

### 3.3. *Work as a Space for Gaining Social and Environmental Justice in a Globalised World*

As argued by most Marxist literature, work is a critical space for resistance and advocacy for the rights of the disadvantaged working class. Historically, workers' expropriation of land and degrading nature due to the over-extraction of resources has led rural people to become impoverished and to be obligated to sell their labour to industries [66]. The commodification of land and labour also take place at the global level due to the 'new international divisions of labour with the concomitant globalisation of ecological degradation' ([67], p.329). Three broad fields of research have been exploring the links between socio-economic inequalities, power relations and environmental appropriation and degradation. First, the field of ecological economics began by analysing material and energy flows during the economic process of transforming nature from the perspective of system ecology [68] and Nicholas Georgescu-Roegen's thermodynamic approach [69]. Second, political ecology focuses on ecological distribution conflicts and the unequal exercise of power to gain access to natural resources, considering social characteristics such as social class, caste, gender and ethnicity [70]. Third, environmental justice has been increasing in popularity since the 1980s and is based on the principle that socio-economic inequalities determine the distribution of the costs and benefits of environmental degradation [71]. To various degrees, all three approaches consider the role of work to be a factor in human nature co-production, although most studies have not explicitly focused on work.

The concomitant ecological, economic and political dimensions of work is generally attributed to labour environmentalism as part of the broader field of environmental labour studies [72–75]. Labour environmentalism considers work a particular space of tension, domination and resistance concerning the negative environmental and social impacts of industrial capitalism [76,77]. It builds on the principle that workers, particularly workers' unions, have a privileged position to mobilise for all sorts of causes, including the environment, which is of crucial importance. As for example, the Green Work Alliance, founded in 1991 by the Canadian Auto Workers union, was meant to defend both workers' health and their living environment. This alliance also supported the development of economic niches with green production and 'green jobs' [78,79]. Another example of a powerful workers' union is the ITUC, which is comprised of 202 million workers in 163 countries and is, therefore, many times larger than all other environmental organisations across the world [76]. In West Africa, the *Réseaux des Organisations Paysannes et des Producteurs Agricoles de l'Afrique de l'Ouest* (ROPPA) are leading workers to support a transition to agroecological farming, arguing against agrochemical companies and in favour of the food sovereignty of poor agricultural farmers. As a combination of analytical and engaged approaches, labour environmentalism challenges the capacity of workers and unions to address environmental issues in the global, national and local political agendas. The field of research is at the interface between theory and practice, mainly with the aim of defending worker's rights from capitalist overexploitation, and preventing from the risk of unequal benefit from 'green economy' by promoting a 'just transition' [79].

Although most researches in labour environmentalism consider the concept of work as a space of social and environmental transformations, they remain evasive on the necessity to reconceptualise the concept of work from a universal category in the perspective of a post-growth economy. This is mainly

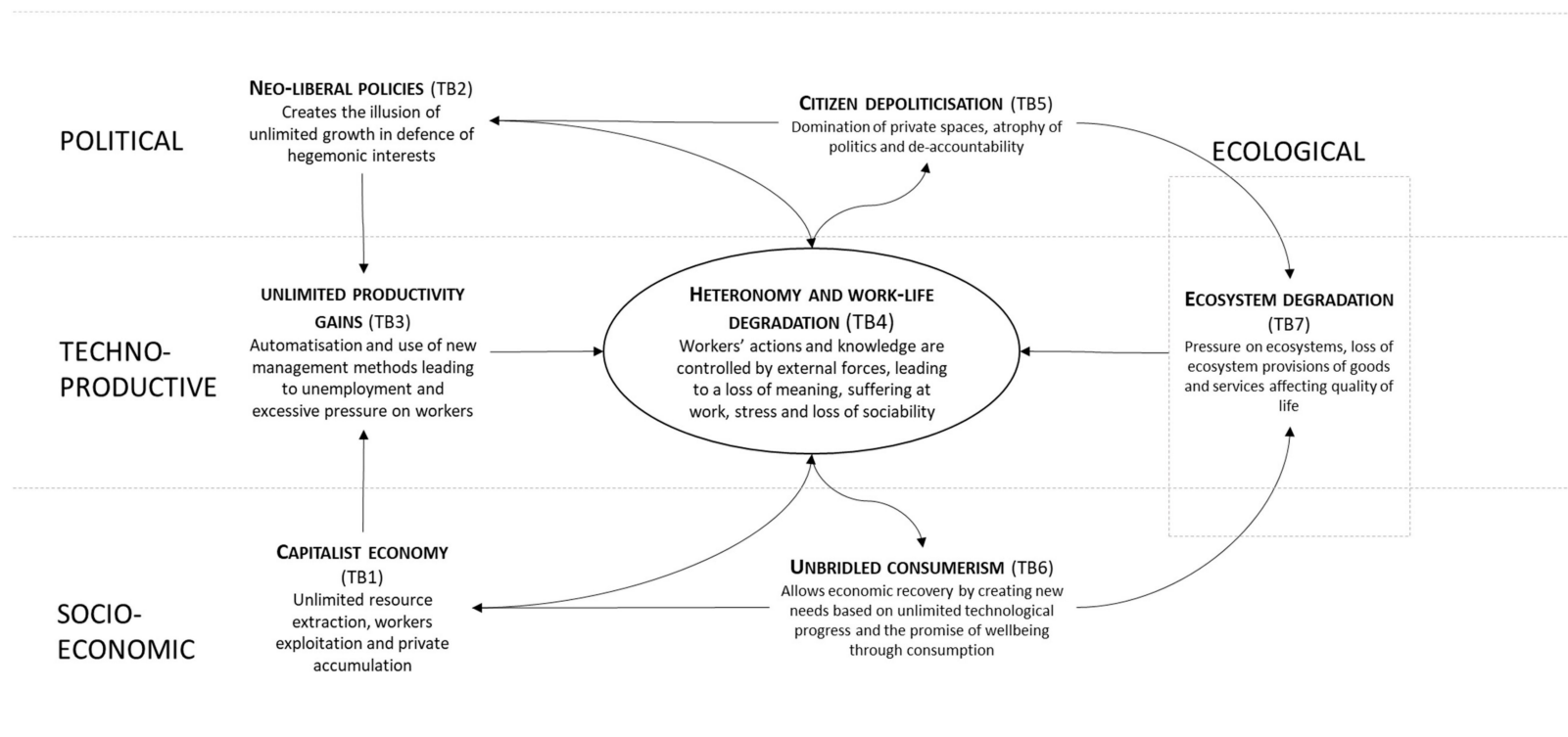
due to the fact that unions historically emerge from the defence of worker's social and economic rights and not from environmental concerns. Moreover, the political structuration of union is generally organised on the basis of economic sectors, that can at some point be challenged by environmental issues. Some fundamental contradictions can therefore emerge from the perspective of defending global environmental issues from the point of view of sectorial and local worker's interests [80].

### 3.4. André Gorz's Political Ecology of Work and Free Time

Since the 1980s, a (French) political ecology of work has raised concerns about how the asymmetric and subtle power relations that arise in production and consumption processes are undermining the ability of workers (and, more generally, citizens) to act according to self-determined pro-environmental and social values. André Gorz (1923–2007) is one of the most prominent and pioneering theorist in this field [81]. In his view, since the Industrial Revolution, work has become increasingly commodified under the control of capitalist oligarchic interests, leading to a reduction in individuals' autonomy, which was replaced by a heteronomous order that over-complicated the productive system and reduced individuals' and groups' freedom and ability to be critically involved in cultural and political life [82,83]. His writings retrace the origin of hyper-consumerism and its ecological consequences, which he associates with the alienation of people through work, unrestricted searching for productivity gains and reductions of free time, which lead people to compulsively purchase unnecessary goods and services. André Gorz was also among the first thinkers to warn against green economic capitalism and what he termed technocratic management of the environment (reminiscent of the green economy approach), which he criticised for attempting to transform environmental efficiency into a new method of economic profit and capitalist hegemony. Further, he proposed a 'politics of time' in which economic rationality is subordinated to eco-social rationality, regarding what he termed 'constructive degrowth', which minimises the need for labour, resources and capital, reduces the 'sphere of necessity' and increases the 'sphere of autonomy' [84]. In the latter, individuals can contribute to creating their own norms of living according to collectively constructed ethical values, independent from the imperatives of production and capitalist accumulation. In *Paths to Paradise* [85], he was one of the first philosophers to advocate for the creation of a universal basic income to allow people to have time to increase their knowledge and understand the intrinsic value of humans and nature rather than unnecessary commodities. In his opinion, WTR should be voluntarily oriented towards better education and solidarity networks to improve wellbeing, resource efficiency and public engagement [85]. In his more recent publications, he focuses on the nature of numeric capitalism centred on immaterial labour and capturing human capital through different hegemonic technologies minimising infrastructure investment, which he termed the 'no-cost economy' ([86], p.54).

Gorz laid the ground for new generations of thinkers to examine the political ecology of work, free time and consumption, all of which require profound reconsideration of the links between work, citizenship and environmental concerns [87–90]. One such thinker, Dominique Méda [91], performed a deep historical and philosophical deconstruction of the concept of work, criticising the essentialist definition and political idealisation of work supported by neoliberal interests. She proposed 'disenchantment' and a 'revolution' of work to make it socially and environmentally sustainable by reducing pressure on workers, supporting work quality criteria and achieving 'a better articulation of the different [working] times on the entire life' ([90], p.61). Similarly, Françoise Gollain [63] condemned the Westernised techno-productive system supported by a liberal ideology, which has contributed to the present situation in which work has become the central mechanism for social identification and rights acquisition. Gollain defends a historicist conception of work as the product of coupled productivist–consumerist systems that lead to the modern *animal labourans* or *homo faber* condition. She argues that the consumerist and Westernised capitalist culture, which adopts a totalising view of work, needs to be progressively replaced by a 'new culture of frugality' that promotes socio-environmental values and supports the autonomy of solidarity networks to achieve 'a revaluation of self-restraint as an ethical value and as a concrete dynamic of change' [63:206]. In his groundbreaking

book, *The Refusal of Work. The Theory and Practice of Resistance to Work*, David Frayne explores contemporaneous imaginaries to find alternative sources of resistance to the domination of work [89]. In a similar vein, Kathi Weeks demands WTR and basic incomes to help people's refusal of work be translated into more freedom, autonomy and new subjectivities [88]. In line with Hanna Arendt's seminal book, *The Human Condition*, those views strongly defend the idea that the liberation of unnecessary labour time is a precondition for citizens' greater involvement in political and creative actions ([92] p.209). They all consider that free time and human capability are the main sources of wellbeing and sustainable transformations. Figure 1 provides a synthetic explanation of the root causes of the current social-ecological degradation and systemic lock-in according to the political ecology of work approach.



**Figure 1.** The vicious cycle of work-life and ecological degradations that dominate the thermo-industrial capitalist system. Four dimensions are emphasised: socio-economic, techno-productive, political and ecological. The capitalist economy, focusing on the idea of unlimited resource extraction, worker exploitation and private accumulation (see text box 1 [TB1]), is combined with neo-liberal public policies (TB2) that create the illusion of unlimited growth in defence of hegemonic interests. TB1 and TB2 both concern a constant search for productivity gains (TB3), creating both unemployment and excessive pressure on workers. The consequences are an increase in the sphere of heteronomy and work-life degradation (TB4) where workers' actions and knowledge are controlled by external hegemonic interests, leading to a loss of meaning, suffering at work, stress and a loss of sociability. TB4 is a factor of citizen depoliticisation, the domination of private spaces and de-accountability. TB4 is also a factor of unbridled consumerism (TB6) allowing economic recovery by creating new needs based on unlimited technological progress and the promise of wellbeing through consumption. In return, unbridled consumerism (TB6) and citizen depoliticisation (TB5) enable maintaining the capitalist economic system (TB1) and neo-liberal policies (TB2). Citizen depoliticisation (TB5) and unbridled consumerism (TB6) also lead to ecosystem degradation (TB7) due to over-production, over-consumption and a lack of social and environmental engagement.

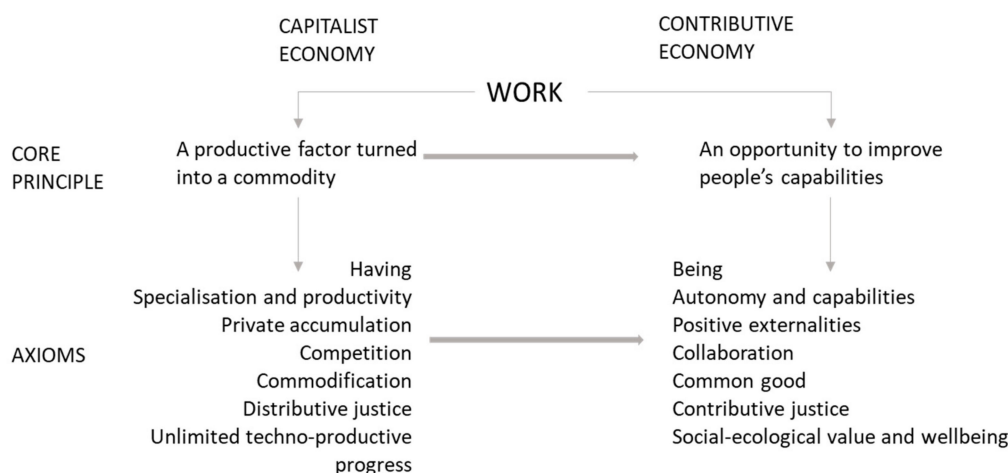
### 3.5. Contributive Economy and Contributive Justice

The legacy of critical theories has raised awareness of the necessary decommodification of work to help reconcile social justice and sustainable behaviours. In the field of ecological economics, the concept of decommodification has been promoted, particularly in regards to land and other types of public goods such as forests or water [93]. This view considers decommodification as emancipating the production of goods and services from market-based rationalities through a valuation of collective possession rather than private property. Following this perspective, the entire functionality of the market economy can be reconsidered. Social and solidarity economy proposes enlarging the diversity of economic functions such as market exchange, profit orientation and private accumulation. It considers several other economic relationships such as gifts, reciprocity and redistribution. Those relationships are not the sole domain of private enterprises and the state but are exercised by various individual and collective social entities. The function of economy is extended to the creation of social cohesion, inter-knowledge, and the collective production and appropriation of common goods and any actions of public utility [94,95]. A recent inspiration emanates from the development of the digital economy, particularly open source software, peer-to-peer platforms and the sharing economy [96,97]. Although technical infrastructures of online collaborative platforms are increasingly captured by strict financial interest, they have the potential for direct interactions between contributors and facilitate the production of societal values on the margin of market relations [98].

Inspired by those approaches, the concept of ‘contributive economy’ has recently emerged as a set of practices performed by free contributors involved in value-added activities and who are receptive to collaborating and sharing their knowledge without complete dependence on financial compensation ([99], p. 164). If it is possible to say that contributive economy benefits from socio-technical transformations combining technical evolution with innovative organisational structures, it remains difficult to characterise precisely. According to the French philosopher Bernard Stiegler and the members of his foundation Ars Industrialis, three core principles characterise contributive economy [99–102]. (1) The boundaries between producers and consumers are blurred as both become contributors. Their roles are often combined, and they can alternate during the production process. Contributors become aware of the power of consumption on production and vice versa and develop strategies of resistance against unethical processes; (2) The produced value is not entirely monetary but can be considered a positive externality or a ‘societal value’ and (3) A contributive economy combines the production of classical goods and services with the production of significations and ethical or ‘existential’ values [103]. It emphasises the importance of *being* rather than *having* [101].

An additional conceptualisation starting from Stiegler’s core definition and from his successors helps identifying a number of related principles of contributive economy: (4) Economic operators are driven by not only the challenge of competition but also a willingness to collaborate and generate social interactions and cohesion; (5) Intrinsic motivations are central drivers of contributive economic activities and several types of non-monetary rewards, including social recognition, self-esteem and knowledge acquisition, motivate economic processes; (6) Work is conceptualised as an opportunity to improve people’s capabilities and autonomy following Amartya Sen’s approach, rather than be reduced to a simple factor of production and consumption [104]; (7) The contributive economy is not exclusive or antagonistic to the capitalist economy; rather, it can be considered a parallel or a niche economy. (8) Contributive economy requires a redefinition of the territorial anchoring of contributors and their activities (including cybernetic spaces) as it is facilitated by web interfaces as well as attempts to re-localise production/consumption networks and direct interactions between contributors [98]. (9) The finality of contributive economy, in Stiegler’s view, is to produce ‘negentropy’, which is defined as a capacity to reduce the effect of entropy and (10) A conditional contributive revenue (revenu contributif conditionnel), which would work similarly to the revenue obtained by entertainment workers in France, was proposed by Ars Industrialis to provide support to any person performing an activity producing societal value by contributing, for example, to improving peoples’ capabilities.

Figure 2 provides a synthesis of the core differences in conceptualising work within the capitalist and the contributive economies.



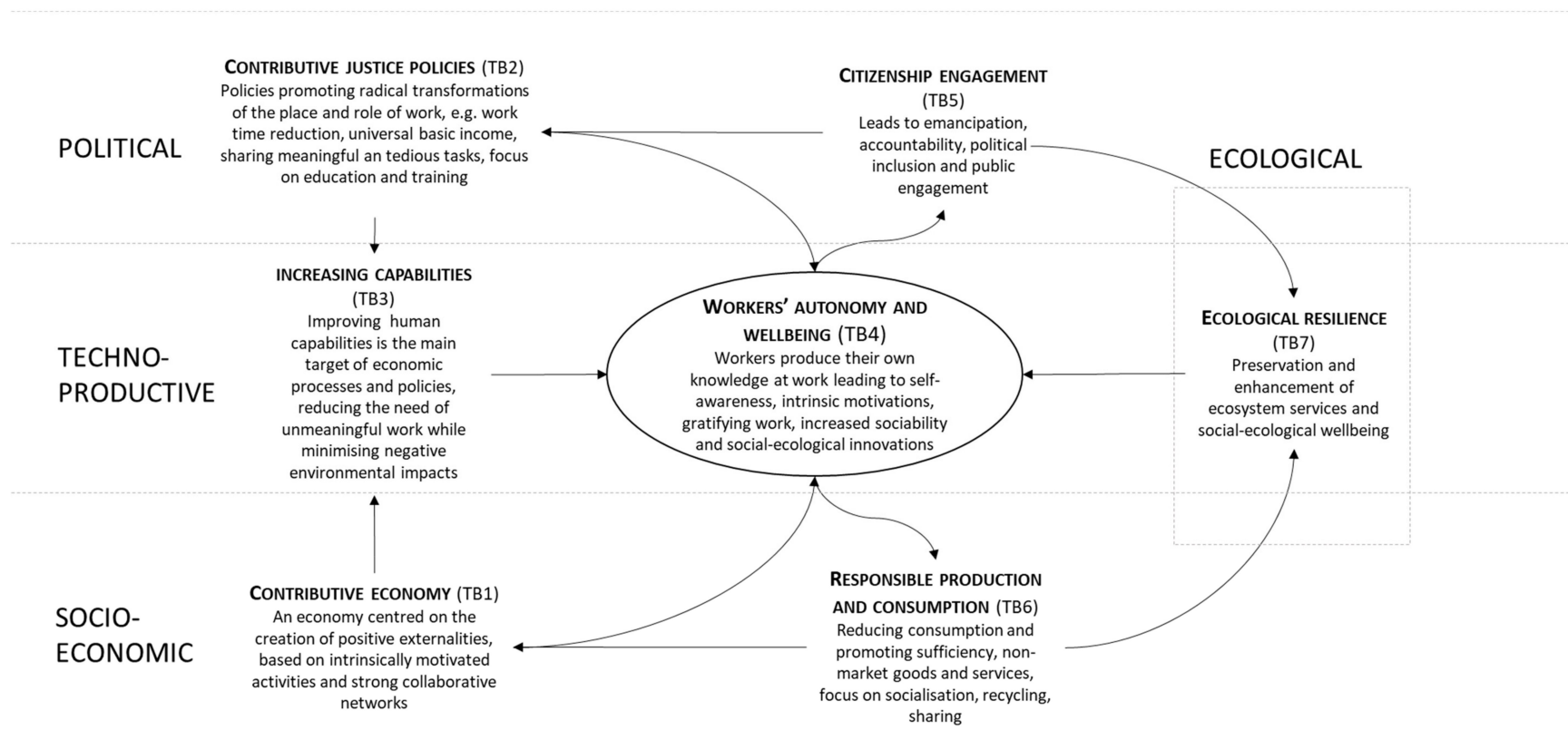
**Figure 2.** Role and place of work in the paradigm shift from a capitalist economy to a contributive economy (based on author's own interpretation of Stiegler, Gomberg and successors).

A second broad aspect of the contributive economy is normative and contained in the concept of 'contributive justice' [105–107]. The latter was first described by Paul Gomberg (2007), who defended the idea that individuals naturally seek to experience the social and psychological gratification of self-accomplished tasks. However, the unequal structure of work distribution across society causes the most complex, interesting and gratifying jobs to be distributed primarily to the elite. This means that it is impossible for a large part of the population to progress and increase their capabilities. Gomberg advocates for equitable distribution of tedious and meaningful tasks, which would allow everyone the opportunity to contribute to society and be recognised for doing so [106]. When low-skilled workers gain capabilities, they increase their social mobility and bargaining power, improve their critical sense and autonomy and become less dependent on business enterprises. Realistically, social structures, power relations and their related ideologies tend to justify unequal access to meaningful tasks by the need for productivity gains and the low feasibility of unskilled workers accessing highly specialised positions [107,108]. This explains why contributive justice is a normative and political process taking place at multiple levels of social recognition [105]. It cannot be the outcome of a supposedly self-regulated market and it requires multi-level political engagement and a practical shift towards the redistribution of incomes, time and tasks. The link between the contributive economy, contributive justice and social-ecological resilience is not inherent but the product of a multi-level perspective articulating local autonomous socio-technical niches and the broader socio-technical landscape that could be considered using appropriate transition theories [5].

There are always more examples in the literature that show how this change of conception from a competitive to a contributive economy can support a sustainability transition. In a pioneering paper, Timmerman and Felix defend the idea that agroecology could work as a 'vehicle to contributive justice' as it requires more complex knowledge skills and stronger solidarity among farmers than is achieved in the conventional agriculture system [109]. The French agroecological association Colibri (Flybird), led by Pierre Rabhi, uses the image of a small bird throwing a drop of water on a forest fire to signify that big changes can happen if everyone makes small contributions [110]. Transition Cities, a famous 'translocal' movement launched by Rob Hopkins [111], has demonstrated that sustainability transitions can be obtained in critical economic contexts by mobilising local networks, inventing new ways of working and creating new connections among people [23]. Contemporary consumer-oriented movements are other examples of workers' voluntary engagement in the mobilisation of consumers to achieve responsible consumption and take part in production, such as through shared gardening and advocacy. These reconfigured networks of producers and consumers are focused on supporting

environmental and social values of production and consumption [112] and, in some cases, proposing an alternative conception of work-life based on personal satisfaction at work and pro-environmental ethical values [113–115]. If the framework of contributive economy and justice represents an interesting attempt to characterise those particular movements at the margin of the capitalist economy, it will require further conceptual and practical elaboration to become operational. A challenge is to find new metrics for estimating the level of contribution and to further conceptualise the social, political and economic dynamics that make it possible.

Figure 3 presents a systemic view of the idealistic rationale behind a transition to contributive economy and justice.



**Figure 3.** Idealistic view of a social-ecological transition to contributive economy and contributive justice policies. Contributive economy (TB1) is based on intrinsically motivated collaboration between multiple contributors to create positive externalities. Contributive justice policies (TB2) promote a transformation of the conception of work to be considered as a value in itself and not just a mean of production. Both TB1 and TB2 principally seek to generate human capabilities as a main outcomes of socio-economic processes (TB3), leading to an improvement of workers' autonomy, sufficiency and wellbeing (TB4). As a result, workers are able to produce their own knowledge and become more self-aware as they have more time for reflexivity, are driven by intrinsic motivations and increase their sociability and their capacity to generate social-ecological innovation. Worker's autonomy also positively influences citizenship engagement (TB5), leading to emancipation, accountability and public engagement, supporting in return contributive justice policies (TB2). Raising awareness for social-ecological issues allows for more responsible production and consumption (TB6), supporting in return the contributive economy (TB1). TB5 and TB6 are both direct drivers of ecological resilience (TB7) that in return influence peoples' well-being.

#### 4. Discussion and Conclusions

All the approaches presented in this paper provide different conceptual and practical instruments to help transforming work according to contemporaneous social-environmental challenges. On the one side green job, WTR and labour environmentalism propose to reform the current system by supporting appropriate legislations and incentivising technical solutions. On the other side, more radical approaches such as the French political ecology of work and contributive economy and justice argue for a complete transformation of the dominant economic rationality. The latter approaches directly challenge the ‘idealisation of work’ and the obsessional aim of full employment considered as an unconditional factor of wellbeing and human control over natural hazard [87,91]. Such radical approaches agree on the urgent need to decommodify work.

In particular, the French political ecology of work has helped reveal the subtle mechanisms of command and control over people’s everyday work that allow powerful financial interests to restrict citizens’ ability to responsibly address social-ecological challenges. By combining work, power and ecosystems, the political ecology of work has helped achieve a better understanding of how economic inequalities and finance-led power asymmetries increase psychological and physical pressure on workers, over-production and over-consumption, leading to social-ecological degradation. The severity of the simultaneous social-ecological degradations do not allow for a completely neutral, heuristic position, but scientifically informed normative actions help people become aware of the root causes of the current social-ecological crisis and find appropriate solutions. What André Gorz called the spheres of autonomy and autoregulation is a space in which individuals can create their own norms of living according to collectively constructed ethical values independent of hegemonic financial interests. In his view, this situation is only possible with a phasing out from wage labour [83].

In a similar line of thought, the concepts of contributive economy and contributive justice are of clear theoretical and practical interest. They enable a conceptual shift from neo-classical economic rationality focused on unlimited techno-productive progress and private accumulation to an economy that emphasises workers’ gratification and the production of positive externalities, contributing to social and ecological values. Such approach allows us to think not only in terms of economic outputs and workers’ incomes but also at the quality working-life during the production processes, with an emphasis on workers’ opportunities to improve their knowledge and capabilities and the meaningfulness of their work. Contributive economy and justice propose a ‘copernician revolution of work’ where work is not only a mean of production but instead a direct target of socio-economic processes with the aim of producing human capabilities in search for social-ecological resilience and the minimisation of entropy.

At the present time, the normative notion of contributive justice remains completely marginal in academic and policy debates. Advocacy is required to officially recognise that (meaningful) work is not only a means of production but also a resource per se that needs to be shared equitably to allow people to improve their capabilities and become autonomous and engaged contributors. This would require substantive reforms of national and international work regulations that go beyond distributive justice, such as reduce working-time, support universal basic incomes and acknowledge the necessity of distributing both meaningful and tedious work among workers and providing more generalised access to continuous education and training. Sustainable change may also be created through the current and progressive emergence of local and regional transition initiatives that combine some of the core principles of a contributive economy. Such transition initiatives should be strongly supported by national and international policies and encouraged by scholars. All these principles are based on the belief that sustainable social-ecological systems can only be maintained through the perpetual stimulation of autonomous humans’ critical and reflexive intelligence, the emancipation of workers and the development of socially and ecologically responsible socio-economic activities.

Such a target can hardly be reached by the sole international and national governance levels often co-opted by corporate financial and political interests. It also requires a strong popular movement of resistance against unbridled consumerism and meaningless jobs, by reinforcing local solidarity network

and the generalisation of new principles of wellbeing [87]. The political and popular appropriation of human work do not mean to neglect technical options such as the development of renewable energies, low technologies or web-based platforms of exchanges to support local synergies. Such technical innovations are absolutely required in the present context of reducing our dependence to fossil energies. It rather calls the attention that technical solutions will not lead to profound transformations without a broad appropriation of the ontological values given to work into locally embedded social and ecological contexts.

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