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The double crisis: in what sense a regional problem?

Betsy Donald^a  and Mia Gray^b 

ABSTRACT

We are now facing Andrew Sayer's 'diabolical double crisis', which encompasses both a deep financial crisis and an environmental one. The scale, scope and nature of this double crisis is downplayed in the regional studies literature, much of which still focuses on innovative growth models often divorced from broader social and ecological contexts. To help solve both crises we call for regional studies to explore new models that allow a focus to be made on the most important issues of our time. We illustrate this by focusing on the contradictions in the waste produced by contemporary regional economies: waste of abundance, labour and resources.

KEYWORDS

inequality; climate change; precarious labour; waste; wealth; redistribution

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INTRODUCTION


During the last few decades, scholars of regional studies have led academic and policy debates on the state of regional economies in a global world. These debates centred on ideas of *regional* aspects of economic and institutional forms, inequality, and the spatiality of power. It is easy to forget how revolutionary some of the ideas were and how they challenged existing paradigms and canonical thought. One such paper was Doreen Massey's 'In what sense a regional problem?' (1979), which argued for new ways of considering regional inequalities by examining how the specificities of place are inextricably bound in their wider spatial context and the flows of capital and power. In this way, Massey encouraged a real paradigm shift as she encouraged the discipline to reconceptualize regional inequality and uneven development. Massey's work on regional uneven development is more salient than ever as there is increasing recognition that today's generalized social injustices and inequalities are manifested in environmental conditions, the global market economy and state responses.

We argue that we are in what Andrew Sayer calls a 'diabolical double crisis', that is, 'on the one hand, a deep financial crisis, [and] on the other hand, the threat of runaway global warming' (Sayer, 2015, p. 29). The scale, scope and nature of this double crisis, with few exceptions, has been downplayed in the regional studies literature, much of which continues to focus on innovative regional growth


models often divorced from the broader economic, social and ecological context. Hadjimichalis and Hudson (2014) make a similar critique about the crisis of contemporary regional development theory – its failure to assess the onset of the 2007–08 financial crises and its inability to explain the consequences. They argue that contemporary regional theory has focused too much on regional success stories at the expense of examining the nature of capitalism as an inherently crisis-prone social system of accumulation with uneven geographical outcomes. We are sympathetic to Hadjimichalis and Hudson's call. However, their critique needs to be extended to incorporate the inextricable link between the global financial crisis and the environmental one, especially at the regional level. The motivation of the present paper, then, is to explore Sayer's double crisis through an examination of the production and reproduction of inequality and waste as we explicitly ask the questions: In what sense is the double crisis a *regional* problem? And, in turn, to what extent can regional theory be part of the solution?

Fortunately, there is growing research on the sustainability transition perspective (Bulkeley & Newell, 2015; Truffer & Coenen, 2012) and research that explicitly attempts to bridge the environmental movement with the concerns of regional development (Gibbs & O'Neill, 2017; Gibbs, Deutz, & Proctor, 2005; Healy & Morgan, 2012). This is important literature focusing on regional practices, such as clustering and networking, that could lead to a more environmentally sustainable economy.

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However, these contributions that bring together issues of economic and environmental change remain on the fringes of regional studies. Given these contributions, does it really matter if only a few regional scholars are contributing to these debates? We argue it is important because the reification of competitive consumption-led growth models in regional studies has exacerbated, legitimized and celebrated the dominant narratives in public policy. This dominant narrative assumes the two crises can be solved together through existing narratives of economic growth. Until we begin to disrupt this narrative of growth, it is unlikely that regional scholars will be part of the solution moving forward.

This paper begins by explaining this double crisis and linking it to the production of inequality and waste, arguing that regional studies has failed to explore the contradictions and complexities that this entails. As the double crisis was occurring, regional studies implicitly followed a growth agenda that emphasized the prescriptive narrative of growth and innovation. While the best of this literature tried to set out an alternative agenda for rethinking the relationship between the economic, social and the environment, much of it ended up as ‘theory led by policy’ (Loving, 1999, p. 379). There was very little questioning the growth model implicit in the contemporary economic and social structures, so when the financial crisis hit, regional scholars were not leading debates about how we might recover from the economic crisis, while restructuring our economies to account for the environmental crisis.

We briefly review the literature that critiques how growth is embedded in all our economic models, paying particular attention to those scholars who have unpacked the relationship between growth, environmental crisis and social inequality. One of the clearest messages from the financial crisis is that the current model of economic growth is fundamentally flawed, and a key argument on climate change is that changing our theories of growth is an ecological necessity. Drawing on insights from this literature, we argue for the creation of a new model of regional economic and environmental well-being, focusing on reducing inequality and waste within the system in terms of wasted abundance, wasted labour and wasted resources. We make clear these questions are not only just global but also are regional and thus relevant for regional studies and theory. We argue that the crisis itself has forced a rethinking of economic and environmental policy and also allowed scholars to rethink and restructure regional theory. In a time of populism with the election of Donald Trump, the vote for Brexit and the general rise of regional discontent, it is more important than ever for regional scholars to examine new models and approaches of sustainable, equitable and just development.

SIDETRACKED REGIONAL STUDIES

In the late 1970s and 1980s, regional scholars were at the forefront of exploration of alternative organizational economic and social forms, which had the potential to transform radically uneven regional development and reduce

inequality. The literature exuded confidence about the potential of regional development – especially localized public and private institutions – to build regional and institutional capacity for development. Many scholars called upon Piore and Sabel’s classic *The Second Industrial Divide* (1984) to extol the resilience of Marshallian industrial districts – the small-scale, regional economic growth found in the Third Italy, Germany and other parts of Europe. The authors’ accounts of flexible specialization were infused with a celebration of alternative regional economic systems where skilled workers were valued, collaboration balanced competition, trust balanced self-interest and social institutions played a fundamental role in regional economic success. Their account was an influential argument that launched a thousand research studies into the new-found belief that regional economies had the potential to be more politically and socially progressive (Gertler, 1995; Saxenian, 1990).

Slowly, much of the focus on regional economies transmuted from the exploration of alternative regional economic systems to the promotion of competitiveness and growth through such ideas as cluster development, network promotion and a strong concern with the form and function of innovation (Cooke & Morgan, 1998; Morgan, 1997; Porter, 1998; Storper, 1995), leading to what Martin (2015) describes as an ‘obsession with agglomeration’ in the spatial literature on regional economies. The discourse on regional competitiveness was further strengthened with the rise of the creative class thesis in the late 1990s (Florida, 2002). While this thesis was highly criticized for its promotion of neoliberal urban culture (Peck, 2005), it nevertheless fuelled a plethora of regional studies that took growth for granted and yet were unable to assess the nature of growth and its distribution. Even many progressive regional academics found themselves entangled in a rather prescriptive narrative of growth imperatives and the new competition with their focus on clusters, creative classes and regional innovation systems. Therefore, when the global financial downturn hit, many regional scholars lacked a theoretical and analytical framework with which to assess the contemporary limits to growth.

THE DOUBLE CRISIS – ECONOMIC CRISIS

While many regional scholars were focused on competitiveness and endogenous growth, others were highlighting the dual crisis of the unsustainable levels on economic inequality, which became exacerbated by the 2007–08 financial crisis and the ongoing crisis of climate and global environmental change.

The story of the 2007–08 financial crisis is well known. The crisis originated in the US sub-prime mortgage market, where banks repackaged and sold this poor-quality debt to the global financial markets as high yield and low risk. Thus, when the sub-prime mortgage markets imploded, it reverberated throughout the global banking system. Both political and economic capital was spent saving the global financial system by recapitalizing the banks and adding liquidity into the banking system. Initially,

governments focused on rescuing systemically important financial institutions and re-inflating their economies (i.e., increasing the money supply through a policy termed 'quantitative easing'). Quantitative easing functioned to boost financial asset prices and stabilize the financial institutions. However, recapitalizing the banks and adding liquidity to the banking system transformed the private banking crisis into a public sovereign-debt crisis (Blyth, 2013).

Crucially, public blame was rarely apportioned to the under-regulated banking system but instead to profligate government spending – particularly in peripheral European countries (despite the fact that none of these countries, except for Greece, had problematic budget deficits before the crisis) (Konzelmann, Gray, & Donald, 2016). The branding of the crisis as a problem resulting from profligate state spending gave rise to another policy cure: fiscal consolidation or economic austerity. World financial institutions, central banks and national policy-makers quickly found consensus around austerity policies. The academy also played a part in justifying austerity programmes. Reinhart and Rogoff's (2010) research argued that high levels of public debt have long-term negative consequences on growth and that austerity is required to reduce public debt-to-gross domestic product (GDP) ratios to produce economic growth after the financial crisis.

Although Reinhart and Rogoff's research was ultimately discredited (Herndon, Ash, & Pollin, 2014), policy consensus continued to stress the importance of reducing public debt. International financial institutions demanded strict austerity measures of countries such as Italy and Greece in return for international financial support and a restructuring of debt. Other countries, such as the United States, the UK and Ireland, chose the pace and scale of austerity policies in order to send positive signals to market analysts (Kitson, Martin, & Tyler, 2011). Thus, austerity policies were enacted in country after country. Although the details differed, and the regional and urban implications varied (Donald, Glasmeier, Gray, & Lobao, 2014), they all shared a desire to restructure the role of the state, to reduce public benefits and obligations, and to shrink the public-sector workforce. These governments chose austerity – even if that produced ever greater levels of inequality, social injustice and environmental degradation.

Growing inequality

Despite regional scholars downplaying the study of inequality in recent decades, there is a long history of inequality research in academia and in policy circles, from disciplines as disparate as geography, sociology, epidemiology and economics and, increasingly, from across the political spectrum. The rise in inequality is a long-term trend that predates the financial crisis, but is exacerbated by national austerity programmes.

This renewed agenda on inequality is prominently signalled by the mainstream success of Thomas Piketty's *Capital in the Twenty-First Century* (2014), which argued that the returns to invested wealth would always grow faster

than returns to labour dependent on wages, which inexorably leads to increased inequality. In a similar manner, Wilkinson and Pickett's *The Spirit Level: Why More Equal Societies Almost Always Do Better* (2009) examines data that show that many social problems are correlated with higher levels of income inequality. The authors show that issues such as declining levels of trust, increasing anxiety and excessive consumption norms are more common in countries where income inequality is higher, thus crucially arguing that inequality is a collective, not just an individual, problem. This is because inequality fuels an individual's anxiety about where they sit in the social hierarchy and that this, in turn, fuels constant consumption.

Inequality has not featured prominently in most mainstream economists' models, and certainly not inequality's relationship to financial instability (Galbraith, 2012). Despite this general lack of theorization, economists such as Paul Krugman and Joseph Stiglitz have continually stressed the pernicious effects of economic inequality (Krugman, 2013; Stiglitz, 2013).

Likewise, geographer Danny Dorling has done much to continue to highlight issues of inequality. Over the years, his work has focused on poverty, various types and measures of inequality and, unlike the economists above, the spatial variation of the above (e.g., Dorling, 2011, 2014). Dorling's recent work shows that income inequality in Europe is most severe in the UK, which resembles the United States rather than other European countries (Dorling, 2015).

Of course, regional scholars have not been absent from the resurgent interest in inequality. Work has focused on both territorial and interpersonal inequality (Martin, 2008; Rodríguez-Pose & Tselios, 2009; Rodríguez-Pose, 2012). For example, Florida and Mellander (2016) remind us of the importance of unionization, race and poverty in explaining regional variation in income inequality (see also Perrons, 2012). However, regional inequality has remained a more potent issue than income or wealth inequality for regional studies. On the whole, the contemporary academic focus on economic inequality has not been a major debate for regionalists, just as the climate crisis has not.

THE DOUBLE CRISIS – ENVIRONMENTAL CRISIS

The scientific evidence for global climate warming is unequivocal (Intergovernmental Panel on Climate Change (IPCC), 2016). The current warming trend is particularly significant because the scientific consensus is that it is very likely due to human activities and 'proceeding at a rate unprecedented in the past 1,300 years' (National Aeronautics and Space Administration (NASA), 2017). No matter the body of data collected – whether on sea level rise, global temperature rise, warming oceans, shrinking ice sheets, declining Arctic sea ice, glacial retreat, extreme events, ocean acidification or decreased snow cover – the evidence is compelling.

Climate scientists, usually a conservative group, have been sounding the alarm bells for years, but it is only recently that politicians and world leaders (notwithstanding the 2016 election of Trump) have also resolved to address the climate crisis. Al Gore's award-winning film documentary *An Inconvenient Truth* (2006), and bestselling book of the same title (2006), went a long way to raise international public awareness about climate change and re-energize the environmental movement. A decade later, numerous policy institutions published reports making the case for integrating environmental aims into economic policy. For example, even the World Bank sought to inspire change around the climate crisis – noting that climate change will push 100 million people into 'extreme poverty' by 2030 as agriculture becomes disrupted and the world's poor are unprepared to deal with climate shocks such as rising sea levels and severe droughts (Hallegatte et al., 2014). Academics and policy-makers have grounded our understanding of climate change in the unsustainability of consumption-led models within a planet of finite resources. This highlights the fundamental link between climate change and many consumption-led models of growth.

Notably absent from the climate and finite resource conversation, however, have been scholars publishing in the field of regional studies. While there are exceptions with work on green economies and industrial ecology (Coenen, Benneworth, & Truffer, 2012; Gibbs & O'Neill, 2017; Gibbs, Jonas, & While, 2002; Truffer & Coenen, 2012; and work in globalization and climate change, O'Brien & Leichenko, 2000), few regional scholars are actually making the explicit connection between the unsustainable industrial and consumptive economic system, rising social inequality, and the growing climate crisis and its implications for regions and regional development. While regional scholars have been good at calling for new models, we must now move beyond the discourse of 'another world is possible' and initiate a more exciting and agenda-setting programme for the field. Our first step is to start seeing the double crisis as a regional problem and for regional scholars to see themselves as offering direction forward. Some may question the extent to which it really matters that regional scholars contribute to these debates, but we argue that the intellectual and policy legacies of our recent, but more narrow, focus on regional competitiveness leaves our discipline out of step with the most pressing regional environmental and economic issues of our times. Despite this recent trajectory, regional scholars are trained to be interdisciplinary and open-minded thinkers and as a result they have a plethora of intellectual traditions, skills, tools and regional concepts from which to draw to think more deeply about the intricate relationship between the economy and environment.

QUESTIONING GROWTH

One approach forward would be to start a real conversation in regional studies about the meaning and nature of economic growth. Even given the contemporary environmental crisis, outlined above, this statement still seems heretical to

many. The conventional view in economics is that we can continue to grow indefinitely because technological change will dematerialize the economy – making products smaller, or even without a material basis – and thus GDP will become increasingly decoupled from any ecological impact. However, economist Juliet Schor argues that dematerialization is hoped for by economists, but not yet observed. She points out that between 1980 and 2005, while many countries' GDP per dollar is now responsible for less material flow, this has been cancelled out by the increase in GDP (Schor, 2010, p. 43). Put another way, despite dematerialization, the volume of material used globally, as well as in each individual region of the world, continues to rise.

In many ways, the limits to growth came to us through the pioneers of the environmental movement (Brown, 2001; Brundtland & Khalid, 1987; Carson, 1962). One important early contribution came from Meadows, Meadows, Randers, and Behrens's *The Limits to Growth* (1972), in which they explore the limits of economic and population growth with finite resource supplies. Early controversy turned into mainstreaming as researchers and think tanks routinely updated the model. In 2009, Hall and Day argued that 'the values predicted by the limits-to-growth model and actual data for 2008 are very close' (Hall & Day, 2009, p. 234). Through the decades the scientific debate has changed from one focused on whether or not the environment is being degraded through resource exploitation to a debate on how to adapt to an already degraded environment. At the same time, environmental scholars have explored how to rearrange society and the economy in order to promote sustainability. This has included a focus on consumption norms, waste, new social collective forms and nature–society relations (e.g., McKibben, 1989; Braun & Castree, 2005; Jackson, 2009; Whatmore, 2002).

Economics is the discipline where the assumptions about the constant necessity of growth are most deeply embedded into its very ontological and epistemological approach (Berg, 2016). However, even in this discipline we can see a long intellectual history that critiques the growth model implicit in our contemporary economic structure. John Kenneth Galbraith, writing in the late 1950s, problematized mainstream economic models which, in the midst of the largest recorded post-war boom, continued to privilege scarcity, economic efficiency and maximizing material growth. He argued that the focus on scarcity was perverse in a situation characterized by affluence and expanded choice about how to use the resulting abundance (Berry, 2013, p. 4).

Galbraith argued that the economics profession created an, often unchallenged, belief that production was an open-ended and self-validating process of meeting the limitless wants and needs of consumers. Mainstream economics has always maintained the importance of the sovereign consumer – the wants and needs of independent consumers trying to maximize the benefit gained from consumption. In this argument, Galbraith recalled John Maynard Keynes' attack on the fiction of consumer sovereignty (Galbraith, 2015). Keynes argued that consumption is driven by primary and secondary needs – primary needs 'are absolute

in the sense that we feel them whatever the situation of our fellow human beings may be' (Berry, 2013, p. 89). While secondary needs are driven by status – needs 'which are relative only in that their satisfaction lifts us above, makes us feel superior to, our fellows' (p. 89). In the same vein, Galbraith distinguishes between satisfying basic human needs and the production of superfluous needs. Galbraith notes,

[i]f the individual's wants are to be urgent, they must be original with himself. They cannot be urgent if they must be contrived for him. And above all, they must not be contrived by the process of production by which they are satisfied. ... One cannot defend production as satisfying wants if that production creates the wants.

(Galbraith, 1998, p. 124)

However, Keynes and Galbraith were unable to foresee the continued importance of the never-ending desire for and industry's constant creation of a desire for consumer goods. Berry (2013) points out that although Galbraith saw the power of advertising and media in the continuous creation of demand, he was wrong in assuming that most people would quickly reach the limits of their desires.

This critique within economics has been revived with the rise of the 'double crisis'. Many contemporary accounts further develop the contradictions between economic growth models and sustainability. Reflecting on the post-crisis economy, McGregor and Pouw (2016) argue that we need to 'question this "growth-fetishism" and to modify our economics so as to acknowledge the increasingly urgent concerns for our social and natural environment' (p. 6). Likewise, Schor argues that another debt-financed consumer boom – which many scholars argue was underlying the bubble that led to the 2007–08 economic crisis – is no longer a viable option for individuals or the planet (Schor, 2010). Like others, she advocates for a better distribution of work, less consumption and a partial return to locally based economies. These ideas are also supported by contemporary heterodox economists such as Skidelsky (2009) and Jackson (2009). Most traditional economists argue that we can 'decouple' gross national product (GNP) growth from resource use. However, Jackson argues this is a myth. A key argument surrounds the importance of climate change – if we fail to cut greenhouse gas emissions we further undermine prosperity.

Clearly, it is not enough to go back to a model of post-war Keynesian redistribution as it was not focused on the environmental crisis which has accelerated since the post-war period. In order to tackle the double crises, regional scholars need to bring together our ideas about inequality and the austerity crisis, environmental justice, and regional theory. We argue that by exploring the issue of waste, we can reconceptualize how the issues of economic and environmental degradation can be brought together in a distributional model that builds on Massey and other radical regional theorists, but transforms their ideas to the contemporary crises. Waste, of course, can be tackled from many different perspectives. What follows is a selection

of examples about how we can think about tackling waste from a regional perspective. We examine wasted abundance, wasted labour and wasted resources, and then think about ways we can reduce, redistribute and renew these sources into productive assets by reworking paradigmatic examples of regional models.

WASTED ABUNDANCE

In *Why We Can't Afford the Rich* (2015), Sayer argues that the top 1% in the wealth distribution is a burden for the well-being of the rest of society. Sayer calls for a different model based on his analysis of wealth distribution. According to the *Oxford English Dictionary*, wealth implies 'an abundance of valuable possessions or money', 'a plentiful supply of a particular desirable thing, well-being'. But Sayer challenges our assumptions that wealth is desirable for individuals and societies. He argues that not only do wealthy societies and individuals produce more pollution but also wealth inequality produces excess consumption and inequality drives consumerism as people consume in order to stake their place in the social order. For Sayer, 'reducing inequality is the first step to combining sustainability with higher levels of well-being' (Sayer, 2015, p. x). He argues that, up to a certain level, wealth is important to satisfy people's basic needs, but that the maldistribution of wealth and its intensification over the last three decades has produced excessive abundance which is costly to greater society and the Earth. Although there is a strong match between subjective and objective well-being (Oswald & Wu, 2011), longitudinal well-being data suggest that wealth is not correlated with well-being or indeed happiness (Di Tella & MacCulloch, 2008; Gray, Lobao, & Martin, 2012).

WASTED LABOUR

The global economic crisis in 2008 created many new market critics, even amongst the architects of our contemporary forms of capitalism. Alan Greenspan, who chaired the Federal Reserve in the United States for almost 20 years, highlighted the intellectual failure behind the Federal Reserve's monetary management models. The 'whole intellectual edifice' of efficient, self-correcting markets 'collapsed' (Skidelsky, 2009, p. 165). This critique of markets has never been more true than when considering labour markets. Labour scholars have long problematized the extent to which labour can be conceptualized as a market at all since workers are constantly divided into distinct, non-overlapping and geographical segments (Peck, 1996; Wilkinson, 2013). Furthermore, labour is embodied in specific gendered and racialized bodies and produces and reproduces cultural norms around the emotional embodiment required of certain occupations, which serves to reinforce segmentation (Hochschild, 2003; McDowell & Court, 1994). Given this, any claim to the efficient use of scarce labour resources is hard to sustain when discussing society's use of labour. High levels of unemployment, underemployment and exclusion from meaningful

employment lead us to challenge notions of efficient or the fair distribution of labour market opportunities. The current use of and distribution of labour resources is often highly inefficient and wasted human abundance is one of the outcomes. The UK currently leads Europe in the level of labour market flexibility; however, although unemployment rates are relatively low, the country has seen the proliferation of low-quality jobs, many of which only offer zero-hour contracts, part-time work or other forms of insecurity. Not only has the private sector reshaped many jobs to reduce stable employment opportunities and replace them with insecure jobs but also governments' austerity policies have contracted public-sector employment and, thus, further reduced the number of well-paid, secure, often unionized, high-quality jobs. Additionally, the 'loose labour market' has increased the number of workers 'pushed' into self-employment. This is not a story of entrepreneurial potential but of more precarious self-employment. Self-employment in the UK was higher in 2012/13 than at any point over the past 40 years; however, at the same time the average income from self-employment fell by 22% over the previous five years (Office for National Statistics (ONS), 2014). We argue this proliferation of unemployment, underemployment and hidden employment is a waste of people's skills and knowledge produced by the market system.

The present paper draws on Bauman's (2004) arguments about wasted lives when he highlights the problems of waste in contemporary labour markets:

[t]o be 'redundant' means to be supernumerary, unneeded, of no use. ... The destination of the *unemployed*, of the 'reserve army of labour', was to be called back into active service. The destination of waste is the waste-yard, the rubbish heap.

(p. 12)

Likewise, Sayer (2009) also argues that underemployment can be seen as waste. Sayer's conceptualization of contributive justice highlights the distribution of work (the quantity of work) as well as the importance of the distribution of the quality of work. He argues that stable, interesting work that provides dignity and identity is fundamental – that all workers want *good* jobs where they can gain an identity and sense of self, not just wages. Thus, underemployment, precarity, the nature and quality of work – not just the distribution of work – become an issue of justice. This is fundamental given the existing patterns of the distribution of meaningful and stable work. For example, in Europe we see large generational differences in the ability of people in different age groups to contribute through meaningful work because of high rates of youth unemployment (Statistical Office of the European Communities (EUROSTAT), 2017). Likewise, underemployment is a particular problem for the young. In the UK, the ONS (2016) estimates that one in three workers on zero-hour contracts would like to be working more hours. The waste of skills in terms of the human capital embodied by the often-well-educated young is striking.

WASTED RESOURCES

One does not have to look far to find evidence of waste in terms of energy, natural resources and landscapes. The United States alone consumes 3.2 terawatts (TW) of the 13.5 TW of global annual power a year and wastes half of that each year. In terms of water, the average American uses 7570 litres per day; 95% of this is from food, energy and products used every day. In terms of food, 40% of all food produced in the United States is wasted; likewise, 30.8% of all food purchased in the UK is thrown away. It is estimated that food waste alone in the United States and the UK could feed the world three times over (Ingenious Designs, 2017). Our insatiable appetite for resources and production of waste exceeds the Earth's ecological capacity.

Our current and defunct economic and production systems as well as consumptive activity also produce wasted landscapes the world over. Berger (2007) describes three elements of waste landscapes: (1) actual waste in terms of municipal solid waste, sewage, scrap metal, e-waste etc.; (2) wasted places in terms of abandoned or contaminated sites; and (3) wasteful planned spaces, especially in the form of low-density, car-oriented urban sprawl literally setting in stone the future use of carbon-intensive transportation and development patterns.

How does waste play out in place? Silicon Valley, California

Many environmental scholars argue that we must understand the local dynamics of economies and politics in order to address global climate change. Bulkeley and Betsill (2003) argue that climate change is not only a global issue but also 'profoundly local' as cities and regions are sites of high consumption-led growth and producers of waste. Silicon Valley has long served as a paradigmatic example of regional growth and innovation. It is the model that spawned regional theories of innovation and that other regions attempt to emulate, but it is also a regional site of profound contradictions – especially when viewed through the lens of the double crisis of climate change and economic distribution. This is why we choose it as a case study for this paper and examine it though two ways. First, we examine the region itself as a generator of inequalities the world over – in terms of a generator of hyper-debt-fuelled consumption-led material norms, a generator of globalized monopoly platform capitalism and global waste. Second, we take the celebrated nature of the region and explore the specificity of regional income inequality and waste.

For decades, regional scholars have celebrated Silicon Valley as the epicentre of innovative economic activity and technological dynamism, but we also know that the region exemplifies the rising income inequality as well as exhibits signs of excessive consumption, heavy reliance on household and local government debt, wasteful car-oriented sprawling landscapes, a high ecological footprint, and the proliferation of toxic hazards.

In 2016, The World Bank Group released a report on *Digital Dividends* (2016) that warned about how Silicon Valley's tech firms were exacerbating income inequality rather than improving it the world over. While there are indeed many perceived benefits of digital technologies, the report warns about the uneven distribution and highlights how many advanced economies face increasing polarized labour markets and rising inequality. This is in part because technology augments higher skills while replacing routine jobs. Moreover, the economics of the platform economy posed by firms such as Amazon, Facebook and Google favour natural monopolies, which is resulting in more concentrated markets, benefitting incumbent firms.

At the national level, Galbraith's *Inequality and Instability: A Study of the World of the Economy Just Before the Great Crisis* (2012) argues that the rising inequality in the United States is closely associated with the tech boom and the rise in stock market valuations of the technology sector, much of which is concentrated in the counties that make up Silicon Valley. Others point to the business model of the top Silicon Valley companies as promoting rapid obsolescence and overconsumption (Bossuet, 2014).

Locally, Silicon Valley's impact on inequality is contested as some scholars argue that many of the inequality and environmental problems of the San Francisco Bay Area are lower than they were a couple of decades ago (Lee & Rodríguez-Pose, 2016). Others, however, see the region as generating and exacerbating income inequality in Silicon Valley (Benner, 2002; Berube, 2018). While it is true that many successful technology companies pay top wages to their most skilled and valued employees, they also subcontract out lower-skilled jobs such as cafeteria workers, janitorial jobs, security guards and gardening work. Although job-growth figures in Silicon Valley are high, Benner and Neering (2016) report that subcontracted jobs have grown at three times the rate of all private sector jobs in Silicon Valley over the past 24 years, accelerating the region's growing income inequality. In addition, the high pay of their top employees produces yet more jobs in the low-paid service sector to provide personal services, food and household reproduction functions, further exacerbating regional inequality.

The inequality in Silicon Valley's labour market is not played out in a homogeneous flat world, but instead is expressed through the deeply gendered and racialized embodied labour processes. The gender-income pay gap in Silicon Valley is significant and is wider in Silicon Valley than in San Francisco or California as a whole. For example, in 2015, men in Silicon Valley with a bachelor's degree earned an average of 50% more than women with the same level of education (US\$117,000 annually compared with US\$39,000). Ethnicity is another important characteristic that segments income and wages in Silicon Valley. Research on per capita income by race and ethnicity shows the distribution of income to be highly racialized. Analysing labour market inequality in Silicon Valley allows one to start constructing a very different narrative around the importance of Silicon Valley as a regional model.

This alternative story would have to foreground issues of race and gender in understanding inequality in the region (Joint Venture Silicon Valley, 2017, pp. 25, 29).

In addition to inequality, Silicon Valley has had its share of environmental challenges – everything from high rates of water and electricity consumption and hazardous waste to unsustainable land use, which has implications for affordable housing and the development of public transit. At the local level, Figure 1 illustrates that hazardous materials used in early high-tech manufacturing still remain an issue for local companies and communities. Silicon Valley itself is home to one of the nation's heaviest concentrations of toxic waste sites. It hosts the highest density of Superfund clean-up sites anywhere in the nation. As others have said, Silicon Valley offers a sobering illustration of environmental inequality and other problems that are indicative of the problems of globalization (Robinson, 2009).

Moreover, the majority of Silicon Valley's employment lands are inherently unsustainable in the form of a vast auto-dependent landscape of suburban office parks (Hurley, 2017). Most of the tech companies are housed in offices located miles from the nearest downtown and work is only accessible by car. In Silicon Valley, notes Hurley (2017), 'this preference for office parks is deeply imprinted on the landscape'. In the 1960s–80s, as the region's tech industry grew quickly, executives found that the low-density office building model was easy to snap up in boom times and easy to dispose of when times were slow. The self-contained campus-like landscape was also good for collaboration and security. '[O]ver time, these real-estate practices were baked into a culture that emphasizes "churn," a dynamic of rapid growth and decline. The result: a fragmented, auto-oriented landscape that puts a heavy burden on the environment and society' (Hurley, 2017).

Therefore, this model of growth so celebrated in regional scholarship embodies the contradictions and tensions of our current models of economic growth. Although the economic crisis has hardly dented regions such as Silicon Valley, certainly the inequality that is exacerbated by the crisis is evident as well as the environmental crisis at the heart of both these crises in pushing growth, consumption norms, inequality, maldistribution and waste – in Silicon Valley itself and as a broader regime of growth promotion.

Silicon Valley may also, however, offer an arena for experimentation for a better future. Take Benner's work on regional labour markets, for example. His research focuses on the relationship between technological change, regional development and structures of economic opportunity, focusing on regional labour markets and their transformation (Benner & Pastor, 2013). Benner and Pastor make a strong argument that regional policy has the potential to make places more equal. For example, Silicon Valley Rising is a longstanding coalition of labour, faith leaders, community organizers and workers who have created campaigns that highlight the region's problems with underemployment, falling wages, subcontracting, and lack of

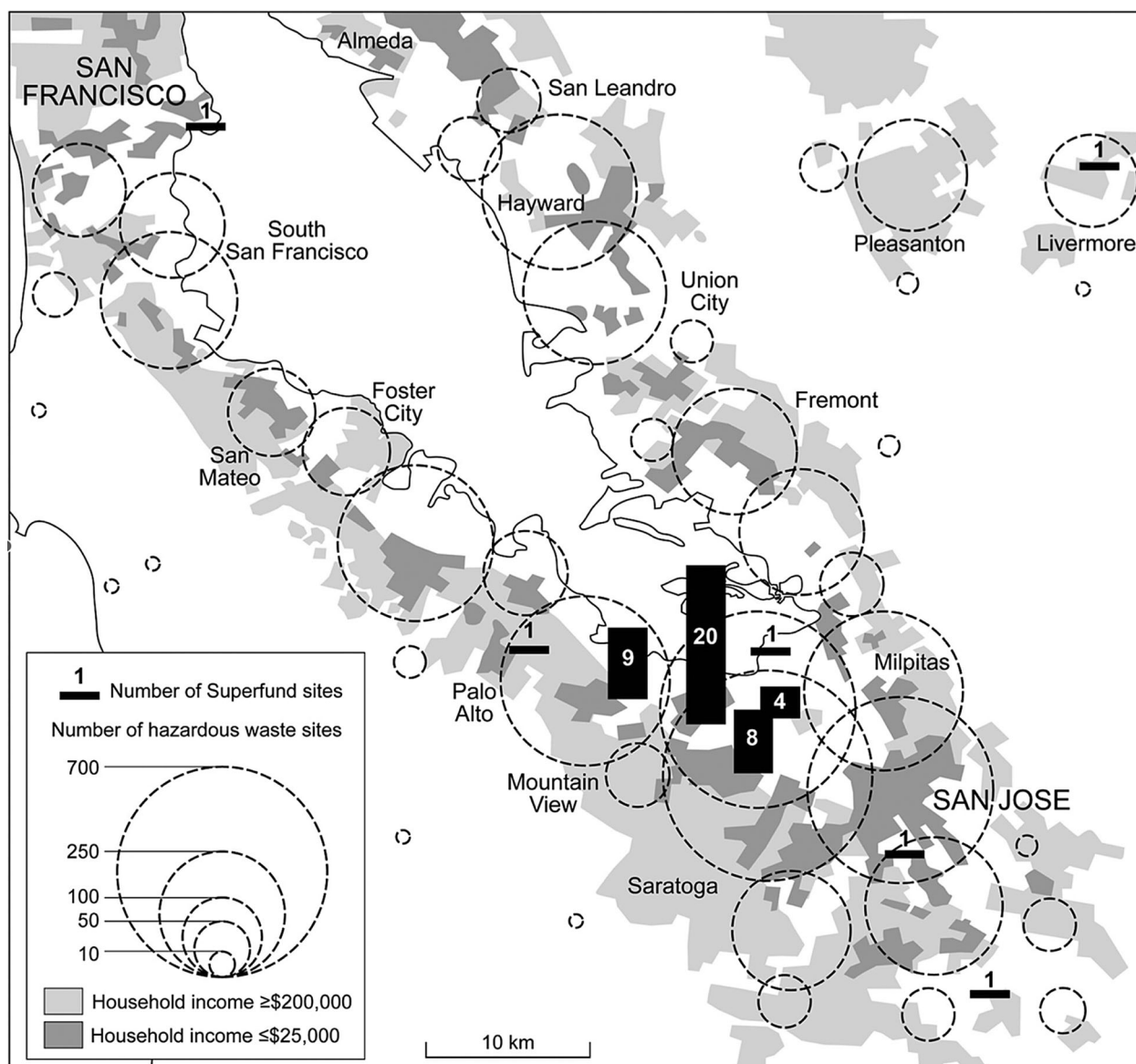


Figure 1. Hazardous waste sites in Silicon Valley, California, next to household income.

workforce diversity and that has won a number of minimum-wage victories.

One company in Silicon Valley, in consultation with a variety of regional actors, seems to be taking the idea of regional experimentation to heart. YCombinator, a well-known tech-company accelerator in Silicon Valley, recently launched an expanded pilot programme to test the idea of universal basic income. The company is providing a basic income of US\$1000 and US\$2000 a month to 100 families in Oakland, California, for between six months and one year. The company will monitor and see what happens, and if the experiment goes well, they will follow up with the main study (Smith, 2016). Governments around the world are trying similar pilots. In 2017, Finland gave approximately 2000 unemployed white and blue collar workers a monthly basic income benefit without penalty for making extra income. The government planned to monitor them over a two-year period to see how people will use the money. However, in early 2018, Finland has since decided not to extend the model. What these

experiments indicate is that we are indeed in a period of enormous rethinking and experimentation. In communities around the world, policy-makers are exploring policy options such as basic income as a way to lessen the vulnerability associated with globalization and the reactionary response of populism. In the era of Trump, Brexit and the rise of populism in the West, many global leaders are sounding the alarm bells that capitalism as we know it must change so that more people can benefit, otherwise the risk is that institutions that have underpinned the global economy since the Second World War will be dismantled (Goodman, 2016).

SHARING THE WEALTH: REDUCE, REDISTRIBUTE AND RENEW

Sayer (2015, pp. 2–3) makes a compelling argument that the rich are not something simply to be envied, but the ways they ‘extract wealth that others produce ... is not only unjust but [also] profoundly dysfunctional and

inefficient'. We see this when we think about the concept of waste and how it might be applied in the context of reducing abundance, renewing the future and meaning of work, and redistributing resources for the benefit of communities. This is where regional scholars have helped us think through the importance of multi-scalar approaches and governance issues in leading us away from a strictly national emphasis that characterizes so many other disciplines (cf. Pike, Rodriguez-Pose, & Tomaney, 2010). In terms of the climate crisis outlined above, there is no question that runaway global warming is real and affecting our communities. Regional scholars could lead the way and work more closely with environmental scientists, local knowledge-keepers and scholars in documenting and exploring new institutions, policies and processes to help reduce our ecological footprint in places and reduce the consumption of products and fossil fuels. This entails not only producing more environmental regional analysis but also encouraging more regional scholars to include this in their more mainstream economic approaches. We are starting to see this in Canada's North as climate scientists, Indigenous communities and regional scholars work together to address pressing environmental, economic and social changes linked to a rapidly changing Northern climate as well as to social, political, and colonial histories and practices (Way, Oliva, & Viau, 2017). We see it in experiments around circular economies and how we might bring this to a regional scale. In terms of reducing inequality, we have seen how current levels of inequality are unsustainable and we must find ways to ensure the current round of global capitalism is benefitting more people more fairly. Regional scholars could initiate research programmes and institutional practices that move us towards a more inclusive and equal economy, especially in the context of an economy that values equity, inclusiveness and basic protections. There are currently many policy experiments around the world – including basic income and government mandated fair wage laws and incentives – that need evidence-based assessment; skills which many regional scholars have expertise. Closely related to this is the idea of renewing people and skills that signify a sense of identity and well-being. Again, regional scholars can help policy-makers think more deeply about the research needed to understand the future of workers, work and skills, especially in our increasingly digital and machine learning age. It is important to remember that it is not about more education in the same way, but finding opportunities for people to apply their knowledges and find ways to support and give voice to the people often left out of the conversation.

CONCLUSIONS AND IN WHAT SENSE A REGIONAL SOLUTION?

To paraphrase Winston Churchill, 'Never let a good crisis go to waste.' We agree that crises can be important cultural moments. Without being reductionist or overly structural in our analysis, we argue that points of crisis have the potential to do two things. First, crises can function to delegitimize previous approaches. Here, existing

frameworks for understanding the social and economic world can be challenged and existing communicative narratives can be disrupted. This is true of the overly economic approaches that have dominated regional theory over the last 30 years – approaches which through their epistemological framework emphasize issues of efficiency over equity. Of course, this is not that automatic and existing explanatory approaches will continue to have many supporters. Second, crises can provide space to promote new intellectual structures and approaches. Times of crisis can open up a window for novel academic approaches and narratives. Here we see the potential for both disciplinary shifts and interdisciplinary innovations. We argue this is something that regional scholars, naturally interdisciplinary in approach, are well positioned to do.

Regionalists have a well-developed response to the extremes of bottom-up versus top-down solutions. They are often comfortable talking about localism, but within a broader regional, national and global framework. They are adept at working within a multi-scale approach. Regional scholars are equally skilled at large empirical studies and grounded work in communities and understand the links between institutional practices and the cultural, social and environmental embeddedness of economic action. It is now time to apply these analytical skills to new models of sustainability within the context of the double crisis of the environment and economy. We now need to turn our 'regional gaze' to these challenges of the 21st century.

Hadjimichalis and Hudson (2014) are right in their critique that too much contemporary regional theory has focused on a narrow understanding of regional success stories at the expense of examining the nature of capitalism as an inherently crisis-prone social system of accumulation with uneven geographical outcomes. We can call upon our intellectual heritage in regional studies by re-examining Massey's debates centred on ideas of the regional aspects of economic and institutional forms, inequality and the spatiality of power. But we must also look forward. We cannot just get out of the first crisis by intensifying and exacerbating the second one. Although regional scholars are justly intrigued by the success stories around regional innovation, they must also understand issues of equity and justice and pay attention to the environmental damage of both production and regional consumption.

Regional scholars are well positioned to understand the extent of spatial decoupling of the two crises – as pollution-heavy industries can be separated from the sites of consumption and are often offshored to other countries. Thus, consumption is often no longer coupled with production and is the more important indicator to capture the problem of, and potential solutions to, the environmental crisis – both in terms of over-consumption and disposal and waste. We argue that by exploring the issue of waste in its broader sense – in terms of wasted abundance, wasted labour and wasted resources – we reconceptualize how the issues of economic and environmental degradation can be brought together in a distributional model that not only builds on Massey and other radical regional theorists

but also transforms their ideas to the contemporary context. The current regional experiments around the world on basic income to address the crisis of wasted labour is an important one to watch. The time is right for regional scholars to move from a celebration of a narrow band of innovative regional growth models to a deeper and more complex reading of the policies and politics implied towards a more just, inclusive and sustainable society. In facing the diabolical double crisis in the economy and the environment, we need to draw upon our resources as regional scholars and ask ourselves once again: in what sense is this a regional problem?; and in turn: to what extent can regional theory be part of the solution?

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