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Labour Branching, Redundancy and Livelihoods: Towards a More Socialised Conception of Adaptation in Evolutionary Economic Geography

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Abstract

The question of how economic landscapes evolve and adapt over time has attracted recurring interest in economic geography and regional development studies. This has been reinforced by the emergence of a more explicit evolutionary economic geography (EEG) in recent years, emphasising the role of inherited capabilities and experiences in shaping local and regional development trajectories. Yet the underlying process of adaptation in terms of how different actors respond to economic change has been subjected to little critical scrutiny, particularly from a broader social agency perspective. In response, this paper is concerned with how labour as a social actor adapts to economic change. Its key contribution is to re-deploy the notion of regional branching from its association with firms and technologies to assess how workers move into new economic activities. Such labour branching assumes both voluntary and involuntary forms, and this paper concentrates on the latter by assessing workers' responses to redundancy. The concept of involuntary labour branching is expanded and socialised beyond the established plant closure literature through an engagement with research on livelihoods and economic practices. This is reflected in the incorporation of three case studies from the global North and South: Longbridge, UK; Nowa Huta, Poland; and Luanshya, Zambia. The degree of industry and skill relatedness generally proved limited across the cases compared to the emphasis on technological or skill relatedness in the industrial branching literature, reflecting the fact that redundancy was linked to the broader decline of pre-displacement and related industries.

Key Words

Adaptation, labour branching, evolutionary economic geography, agency, practice

1. Introduction

The question of how economic landscapes evolve and adapt over time has attracted recurring interest in economic geography and regional development studies (Boschma and Frenken, 2006; Mackinnon *et al.* 2009). This has been reinforced by the emergence of a more explicit evolutionary economic geography (EEG) in recent years, emphasising the role of inherited capabilities and experience in shaping on-going local and regional development trajectories (Boschma and Martin 2007; Pike *et al.* 2016). Questions of adaptation are of central importance to EEG, which contends that firms and other economic actors adapt to economic change on the basis of pre-existing routines and assets (Boschma and Frenken 2006). This tends to result in distinctive patterns of regional industrial branching whereby regions, or firms and entrepreneurs within them, diversify into new industries that are technologically related to existing ones (Neffke *et al.* 2011). Yet the underlying process of adaptation has been somewhat taken for granted and subjected to little critical scrutiny (Hu and Hassink 2015), particularly from a broader social agency perspective (Pike 2005). Despite a recent effort to incorporate institutions and labour flows (Boschma and Capone 2014; Fitjar and Timmermans 2016), EEG research on branching remains rather narrowly focused on firms, knowledge and technology with little consideration of broader social relations and the role of social actors such as labour, states and civil society groups (Martin and Sunley 2015; Morgan 2012). While this work incorporates questions of labour mobility and skill relatedness between industries (see Boschma *et al.* 2009; Neffke and Henning 2013), these are treated as key inputs to the broader process of regional industrial branching, neglecting the motives and practices of workers.

In response, this paper is concerned with how labour adapts to economic change, based upon an understanding of adaptation as the on-going process by which economic and social actors respond to “successive challenges and disturbances” (Hu and Hassink 2015: 13). This is underpinned by the necessity of social reproduction whereby workers must continue to meet the material needs of their households for food, shelter, clothing and health care in the context of increasingly globalised processes of economic restructuring and social change (Katz 2001). My focus on the adaptation of labour serves to address the hitherto neglected question of how labour agency and labour market geographies shape and condition evolutionary processes over time and across space (Dawley *et al.* 2014: 158). Agency is understood as intentional and meaningful action in the context of broader economic forces (Gregson 2004: 22), informed by

debates in labour geography which have focused attention on workers' ability to shape their own conditions of production and reproduction, moving beyond the renewal strategies of organised labour to consider the everyday practices of 'ordinary' workers (Coe and Jordhus-Lier 2011; Herod 2001). Beyond this, the paper aims to socialise the concept of adaptation in EEG through an engagement with work on livelihoods and economic practices (Jones and Murphy 2011; Stenning *et al.* 2010), emphasising more diverse forms of social agency (Pike 2005).

In focusing on how labour adapts to economic change, the paper redeploys the notion of regional branching to assess how workers move into new economic activities and sectors. It aims to broaden the scope of branching research in EEG beyond the pre-occupation with firm and technology-based forms of industrial diversification by introducing the novel concept of labour branching. This is defined in terms of the movement of workers between different jobs and economic activities, underpinned by the need for both social reproduction and fit with a changing socio-economic environment, particularly in terms of local industry mix and labour market demand (Neffke *et al.* 2016). It can be either voluntary or involuntary in nature, referring to the 'normal' flow of labour between jobs in search of higher wages and better working conditions and the 'forced' search for new sources of employment in response to redundancy respectively (Boschma *et al.* 2009; Neffke *et al.* 2016). This paper focuses on involuntary forms of labour branching in the context of plant closure and redundancy as this form of 'disturbance' presents the greater adaptation challenge for workers (Hu and Hassink 2015), requiring the development of new forms of remuneration to replace lost income and secure social reproduction.

The remainder of the paper is organised in five sections. Following this introduction, the next section reviews existing understandings of adaptation in EEG, focusing particularly on the central concept of regional branching, supported by a discussion of labour agency. This is followed by an effort to expand the conceptual framework of labour branching through an engagement with research on economic practices, livelihoods and climate change. The subsequent section is concerned with workers' responses to plant closure, focusing on three case studies from the global North and South in the UK, Poland and Zambia. The discussion then draws together the key forms of branching from the case studies and relates them back to the conceptual framework developed earlier in the paper. The final section concludes the paper.

2. Adaptation, Branching and Labour

The concept of adaptation originates in evolutionary biology where it is derived from the Darwinian theory of evolution, referring to the “genetic characteristics of individual organisms that enable them to survive and reproduce in the environment they inhabit. Successful adaptation leads to the continued viability of a species or ecosystem, but not necessarily the survival of individuals within a population” (Smithers and Smit 1997: 133). Accordingly, adaptation means modification or “fitting to suit”, involving a “long term process of learning and adjusting” (Barnett 2001: 980). In this sense, it can be seen as the essence of evolution (ibid). In addition, the concept of adaptation is also rooted in cultural ecology where it refers to the ability of an individual to adjust to their surroundings, gaining a cultural as well as biological meaning, albeit one with a strong biological legacy (Head 2010).

While it has sometimes been used interchangeably with adjustment in the economic geography literature (see Clark *et al.* 1986; Gordon 2003), adaptation is more reflective of heterodox notions of diversity and variety (cf. Grabher and Stark, 1997), in contrast to the more orthodox economic connotations of adjustment. From a neo-classical economic perspective, labour migration represents a key mechanism of regional adjustment, with workers moving from labour surplus to labour deficit areas in search of employment and higher earnings, serving to correct spatial irregularities in labour demand and supply (Richardson 1978). In practice, however, research has often found that the adjustment effects of migration are relatively limited (Fidrumc 2004; Gore and Hollywood 2009), resonating with a more heterodox and socialised understanding of labour as spatially embedded in particular places through family ties and social networks (Peck 1996).

As noted earlier, EEG has generally focused on how firms and entrepreneurs adapt to processes of industrial change and restructuring. This is often underpinned by Nelson and Winter’s (1982) evolutionary theory of economic change which contends that economic evolution is grounded in a variety of firm-specific organisational routines (Boschma and Frenken 2006). Adaptation occurs through a market-based selection process driven by Schumpeterian innovation based on new products, processes, inputs and markets as well as production costs (Essletzbichler and Rigby 2007). This ensures that ‘smart’ fit routines are passed on and

diffused through differential profit and growth rates within an industry while unfit routines disappear (Boschma and Frenken 2006). Despite the emphasis on market selection, evolution is not seen in narrowly economic terms, with the creativity and learning capabilities of entrepreneurs and firms playing a key role in driving economic change (Boschma and Martin 2007). Yet, while this approach provides a theory of economic evolution through (firm) adaptation, the concept of adaptation itself has been subject to little direct scrutiny.

One way in which the concept of adaptation has been elaborated in the EEG literature is through the distinction between it and adaptability, based on the work of Grabher (1993) and Grabher and Stark (1997), largely in the context of regional institutional change. Here, adaptation is equated with the negative ‘lock-in’ of social actors to existing pathways of economic growth, whilst adaptability is viewed positively in terms of the enabling effects of a range of looser and weaker relations (the strength of weak ties), allowing such actors to respond positively to change (see Grabher 1993; Pike *et al.* 2010)). This paper follows Hu and Hassink (2015) in seeking to transcend this dualism on the basis of a more generic understanding of adaptation as the on-going process by which economic and social actors adapt to successive challenges and disturbance so as to meet their material needs, requiring an important element of (re) fitting to a changing socioeconomic environment.

A prominent strand of recent EEG research is concerned with regional diversification or branching, whereby new industrial growth paths grow out of related sectors within the same region (Boschma and Frenken 2011; Neffke *et al.* 2011). Regional branching has been viewed as a firm and industry-level process with some recent consideration of the role of inter-industry labour flows and skill relatedness (Fitjar and Timmermans 2016; Neffke and Henning 2013). It is underpinned by the concept of related variety, defined by the presence of a number of complementary sectors with overlapping knowledge bases and technological capabilities in a region (Frenken *et al.* 2007). Boschma and Frenken (2011) argue that regional branching operates through knowledge transfer mechanisms such as entrepreneurial spin-offs, firm diversification, labour mobility and social networking. Branching has been empirically assessed in terms of technological relatedness with Neffke *et al.* (2011) demonstrating that industries were more likely to grow in a region and be attracted to it if they were related to pre-existing industries in that region. More recent work has measured relatedness through flows of resources between industries, focusing on trade linkages based on input-output tables or labour mobility (Fitjar and Timmermans 2016). As such, labour is incorporated through the movement

of workers between firms and industries and their participation in social networks (Boschma *et al.* 2009). Yet this offers a rather restricted treatment of labour mobility as an input into the broader process of regional industrial branching, echoing the traditional geography of labour perspective which essentially views labour as a passive factor of production (Herod 2001).

The concept of regional branching is opened up and recast in this paper to consider how labour moves between successive forms of employment and economic activity. My conceptual framework is based upon an understanding of labour branching as a product of the intersection of two underlying and sometimes conflicting tendencies within capitalism (Figure 1). The first is the process of capitalist competition and market-based selection which can be seen as driving the temporally and spatially uneven evolution of regional economies (Essletzbichler and Rigby 2007). Regional economic evolution results in the restructuring and closure of established industries (path destruction), as well as the growth of new ones (path creation). The second refers to the pressure for labour to engage in economic activity in order to generate income to meet its material needs and ensure social reproduction in the context of capitalist social relations. In essence, social reproduction “hinges upon the biological reproduction of the labour force, both generationally and on a daily basis, through the acquisition and distribution of the means of existence, including food, shelter, clothing and health care” (Katz 2001: 711). It also encompasses the socialisation of a differentiated and skilled labour force, relying upon a range of historically- and geographically-specific cultural forms and practices (*ibid*). As such, the skills and practices of labour often reflect established patterns of regional industrial specialisation (Storper and Walker 1989), which creates pressures for adaptation if these patterns of specialisation are disturbed by broader processes of capitalist competition and selection.

Figure 1 about here

My concern with labour agency (figure 1) is informed by recent labour geography debates, emphasising the need to re-embed such agency in the social relations that shape and condition its variegated forms of expression (Coe and Jordhus-Lier 2011). Labour agency can be unpacked along three main dimensions with reference to labour branching processes. The first concerns the everyday strategies and practices of labour, ranging from routine coping strategies to collective forms of resistance to closure (Pike 2005). The second concern is the geographies of such agency, particularly in terms of whether branching is local or trans-local in scope

(Weller 2008). Third, the temporalities of labour agency refer to its dynamics and rhythms in relation to unfolding political and economic processes, with Emirbayer and Mische (1998) identifying the three key dimensions of: ‘iteration’ which is largely habitual and informed by the past; ‘projectivity’ in terms of the capacity to imagine future possibilities; and ‘practical evaluation’ involving the assessment of past habits and future projects through present contingencies (cf. Gardiner *et al.* 2009). At the same time, as Jessop (2001) argues from a strategic-relational perspective, agency should always be examined in relation to structure (and vice versa), and structure can be understood in terms of the “conditions that simultaneously enable, frame, suggest and constrain actions/s” (Gregson 2004: 22). This requires the acknowledgement of the underlying structural domination of capital in the wake of on-going processes of political and economic restructuring and the unequal power relations that structure many labour markets (Weller 2008).

Labour branching can be seen a distinct form of regional adaptation from industrial branching, focusing attention upon how workers respond to the challenges and disturbances of industrial closure and restructuring under capitalism. It is defined as the movement of workers from previous forms of employment into new jobs and economic activities. This incorporates four key elements: the development of new employment and income-generating activities; the redeployment of existing assets and skills (Shuttleworth *et al.* 2005; Stenning *et al.* 2010); the question of relatedness between previous and new forms of employment and livelihood support; and a sense in which labour branching involves workers ‘(re)fitting’ themselves to a new or changed socioeconomic environment (Hu and Hassink 2015). Informed by research on industrial branching (Boschma and Frenken 2011; Neffke *et al.* 2011), it is the process of workers moving into new jobs and economic activities that is the essence of labour branching. As such, labour branching does not necessarily require the construction of a diverse portfolio of activities as emphasised in much of the livelihood diversification literature (Ellis 1998), but can incorporate strategies involving a single new source of income at a particular point in time, providing that this is significantly distinct from the previous form of employment in relation to industry, market and / or the utilisation of skills.

Workers’ assets, skills and resources can be seen as having a close affinity with the focus on firm assets, routines and capabilities in the industrial branching literature, focusing attention on the redeployment of these assets and skills as part of the adaptive process. The question of relatedness, referring to the degree of similarity and overlap between economic activities,

encompasses a range of dimensions in the context of labour branching, principally sector or industry of employment, the assets and skills deployed, occupational status and social networks. Like regional industrial diversification, employment and livelihood diversification can be either related or unrelated to previous activities, depending upon whether or not it uses existing assets and skills (Boschma *et al.* 2016). This is an empirical question which is likely to vary considerably between cases. The issue of fit with a changed regional and extra-regional environment focuses attention on questions of local industry mix, particularly the presence of industries that are similar or related to those in which workers were previously employed (Neffke *et al.* 2016), and associated patterns of labour market demand in shaping available labour branching options (Shuttleworth *et al.* 2005).

As indicated earlier, the remainder of this paper is concerned with involuntary forms of labour branching which occur when the existing material basis of social reproduction is undermined by the closure of existing plants and workplaces (Figure 1). This can be seen as a ‘forced’ and exogenously-driven form of labour branching in contrast to the unforced and endogenous process of voluntary labour branching between jobs (Neffke *et al.* 2016). The pronounced degree of disturbance and ‘shock’ associated with involuntary labour branching means that it is of particular interest from an evolutionary perspective (Hu and Hassink 2015), presenting a profound adaptive challenge in terms of the often acute economic pressure to develop new income generating strategies to replace past sources of employment. While voluntary labour branching may involve only a change of employer and workplace as workers change jobs (Boschma *et al.* 2009), the nature of the branching process is likely to be more far-reaching and radical in the context of redundancy as workers may be forced to target different sectors, activities and geographical locations. As Neffke *et al.* (2016) demonstrate in the context of Germany, this depends considerably on local industry mix, with a large local presence of pre-displacement and related industries reducing the rate at which workers left their region of residence. Having developed this embryonic conception of labour branching, the paper now moves beyond EEG to broaden and extend it through an engagement with research on plant closure, livelihoods and economic practices.

3. Labour Branching, Livelihoods and Practices

Research on plant closure and worker resettlement provides a first source of empirical insight into processes of labour branching. It has focused largely on mass redundancies in

manufacturing industries in the global North, comprising both quantitative surveys of resettlement outcomes and qualitative investigations of redundant workers' experiences (Dobbins *et al.* 2014; Pinch and Mason 1991; Shuttleworth *et al.* 2005). A common finding is that younger and more skilled workers have the best re-employment prospects, although new employment can often be part-time and/or temporary and pay lower wages than pre-redundancy employment (Shuttleworth *et al.* 2005; Neffke *et al.* 2016; Weller 2008). Reflecting the importance of labour demand, redundant workers tend to find employment more quickly in buoyant local labour markets (Pinch and Mason 1991; Shuttleworth *et al.* 2005). In addition, more skilled and younger workers are more likely to access work outside the local area, while less skilled and older groups are more locally bound (Dawley 2007; Weller 2008). In their study of redundant steel workers in South Wales, Harris *et al.* (1987) uncovered a 'chequered' post-redundancy pathway comprised of periods of intermittent and often casual employment and unemployment. This was seen as a key means of 'getting by' in the absence of permanent employment, reflecting the depressed nature of the local labor market at the time. Qualitative research provides further evidence of this tendency with redundant workers often forced to 'make do and mend' by taking up low-skilled and low-paid employment in the local economy (Dobbins *et al.* 2014; Blyton and Jenkins 2012). Other studies point to a variety of post-redundancy experiences with Gardiner *et al.* (2009: 742) indicating that individuals who have developed projective and evaluative capacities and who had access to resources and support systems in the past were best placed to seek new careers.

Understandings of labour branching can be extended beyond the often rather narrowly-framed plant closure literature through an engagement with the livelihoods approach in development studies (De Haan 2012; De Haan and Zoomers 2003). A livelihood is defined as comprising the "capabilities, assets (including both material and social resources) and activities required for a means of living" (Carney, 1998: 7). The concept of assets – originally conceived of in terms of distinct human, natural, physical, financial and social capitals – is an important building block of the livelihoods approach, encompassing a range of material and social resources such as land and other natural materials, labour, skills, knowledge, equipment, food, livestock, money and social relations and supports (De Haan 2012). These assets are not only used to build people's livelihoods, they are also "the basis of agents' power to act and to reproduce, challenge or change the rules that govern the control, use and transformation of resources" (Bebbington 1999: 2022).

Labour branching is particularly evident through the key process of livelihood diversification, which is crucial in enabling members of low-income households to ‘get by’ in the face of wider processes of change (Stenning *et al.* 2010: 98-99; Forsyth and Evans 2013). It is often based upon forms of ‘portfolio employment’ involving the combination of several jobs, sometimes in the informal as well as the formal economy. Most attention has been directed towards farmers and members of farm households engaged in other economic activities including trading, crafts, manufacturing, working on other farms, and wage labour in construction and manufacturing (Forsyth and Evans 2013). In addition, livelihood strategies have become increasingly multi-local in nature through various forms of economic migration, creating translocal and transnational networks as migrants retain links with their home areas (Katz 2004; Stenning *et al.* 2010). The livelihoods approach helps to not only broaden the scope of labour branching research beyond adaptation to plant closure in the global North, but also to blur the distinction between its voluntary and involuntary forms by highlighting people’s agency in responding to exogenous pressures on livelihoods, rather than redundancy *per se*.

There is considerable overlap between the livelihoods approach and research on adaptation to the human impacts of climate change, where adaptation is often counter-posed to mitigation (Forsyth and Evans 2013). Here, the evolutionary concept of adaptation pathways is of particular interest, highlighting the multiple trajectories followed by groups and actors (Campeanu and Fazey 2014). It emphasises the path dependent nature of adaptation in terms of how current processes are shaped by past decisions and strategies, often resulting in substantial continuity through the persistence of some paths and the culmination of others. In their study of long-term adaptation processes in a Romanian village, Campeanu and Fazey (2014) point to the interdependencies between the pathways of different socio-ethnic groups, reflecting the changing constitution of local social relations. A substantial degree of convergence around a predominant normative pathway was evident, involving subsistence agriculture in combination with flexible income generating activities, which tended to reinforce traditional inequalities and social hierarchies between the different groups in the village. In common with other research (see Smith *et al.* 2008), this study highlights the assets and resources deployed by actors to support adaptation and livelihood diversification, particularly land, social capital, ethnic symbolic capital, political capital, cash inflows and human capital. The concern with adaptation pathways supports a dynamic and nuanced conception of labour branching in EEG, based on the recognition of multiple trajectories, historical continuities and social interdependencies.

The notion of labour branching as a path-dependent process of employment and livelihood adaptation and can be deepened further through an engagement with the literature on the economic geographies of practice (Jones and Murphy 2011; Stenning *et al.* 2010). In general, “‘socioeconomic practices’ can be defined as the stabilised, routinised, or improvised social actions that constitute and reproduce economic space, and through and within which diverse actors ... organize materials, produce, consume and/or derive meaning from the economic world” (Jones and Murphy 2011: 367). In the context of everyday work and livelihoods, the notion of socioeconomic practices refers to the diverse and mundane actions by which diverse actors and communities ‘make do’ and ‘get by’ to meet their material needs (Stenning *et al.* 2010: 64). Assets of various kinds, including land, property, skills and social networks, underpin socioeconomic practices (ibid: 63-64). According to Jones and Murphy (2011: 372), the so-called ‘practice shift’ in economic geography should not be seen as major theoretical ‘turn’ in its own right, but as a way of understanding broader processes through an emphasis on ‘ordinary’ actions and seemingly ‘mundane’ activities. Here, an interest in practice provides a more nuanced and grounded understanding of labour branching in relation to the diverse actions, meanings and relations through which it operates in particular spatial and temporal contexts.

In their effort to demarcate practices as distinct research objects, Jones and Murphy (2011) identify four constitutive dimensions of practice: perceptions which refer to the motivations, desires and objectives of actors; performances incorporating situationally appropriate actions, social interaction and communication, and mutual recognition and reciprocity; patterns, which pertain to regulative and normative influences; and power relations, reflecting the structural positionalities of actors and the power that is embodied in, and produced through, them. These four dimensions of practice must always be situated within specific time-space contexts (Figure 1) (ibid).

These dimensions of practice shape labour branching as a form of adaptation, although their deployment in a labour market context requires some respecification of the underlying categories. In particular, the notion of perceptions requires relabeling as perceptions and qualities to encompass the demographical characteristics and socioeconomic assets of labour (for example skills, age, knowledge, social contacts, land) (Shuttleworth *et al.* 2005). Workers’ perceptions of labour market demand also shape their branching decisions in terms of

identifying the activities, sectors and locations to target. The performance dimension of practice relates to the actual branching actions and decisions of workers and the social networks and interactions through which they are channelled. As well as broader regulative and normative factors, patterns are also taken to include various forms of institutional and policy support. These may include ‘readaptation benefits’ involving specific time-limited payments to redundant workers for retraining and re-employment (Fevre 1987), alongside the provision of information and advice services and support for retraining in new skills (Bailey *et al.* 2012). Finally, power relations focus attention on the positionalities of actors in relation to the demand side of the labour market, particularly in terms of its absorptive capacity to accommodate redundant workers (Osterland 1989). Local industry mix represents an important dimension of this (Neffke *et al.* 2016).

This section has sought to expand and deepen the conceptual framework of involuntary labour branching in four key respects. First, a focus on the socioeconomic practices emphasises the ordinary, everyday actions, relations and contexts through which branching occurs, focusing attention on the four constitutive dimensions of practice outlined above. Second, labour branching requires the mobilisation of the economic assets and resources of individuals and households, including property, skills, knowledge and social networks (Carney 1998; Stenning *et al.* 2010). Third, nine labour branching pathways can be identified from research on plant closure and livelihoods: local re-employment, self-employment, commuting, out-migration, livelihood diversification, movement into the voluntary sector, re-training, retirement, and unemployment and economic inactivity. These may overlap considerably in practice. Fourth, work on the human impacts of climate change provides a deeper and more nuanced understanding of such pathways, drawing attention to the overlapping but differentiated trajectories of involuntary labour branching pursued by different individuals and groups (Campeanu and Fazey 2014). The relationships between labour agency, labour branching processes, time-space contexts and labour branching pathways should be seen as recursive in nature, with the adopted pathways also feeding back into the processes of regional economic evolution and social reproduction (Figure 1)

4. Labour Branching in Practice: Case Studies of Workers' Responses to Redundancy

This section examines how involuntary labour branching operates in practice through a selection of three case studies from the literature. These are defined as plant- or site-specific cases where workers are adapting to the closure or contraction of a single large site of employment or plant, rather than to regional economic decline more broadly. Here, my definition of closure is based upon Pike's (2005) call for the adoption of a more relational approach that views closure as a path dependent social process. Such an approach is attentive to the temporal transformation of closures and the role of social agency and socio-institutional context in shaping place-specific outcomes (ibid).

Each case provides a distinct time-space context in which to examine the everyday practices of labour branching (Figure 1) (Jones and Murphy 2011). The temporality of branching is assessed in relation to its timing and rhythms, encompassing 'iteration' in the sense of its relatedness to previous modes of mass industrial employment, 'projectivity' through the identification of branching pathways and processes of practical evaluation, whereas the spatial aspect is particularly concerned with the local and translocal dimensions of branching. These are related back to the four abstract dimensions of practice derived from Jones and Murphy (2011) in the subsequent discussion section.

The three cases are selected from the literature on an international basis, functioning as 'maximum variation' cases in terms of labour market conditions, levels of economic and social development and the availability of 'readaptation' benefits' and state support (Table 1) (Flyvbjerg 2006). Their selection reflects my aims of extending understandings of labour branching beyond the plant closure literature through an engagement with research on livelihoods and practices and of bringing together overlapping concerns from the global North and South. The cases represent a first 'cut' at grounding the general conception of involuntary labour branching outlined above in specific time-space contexts. Their identification is based upon a review of post-2000 research on plant closure and livelihood adaptation, requiring a number of related sources that uncover the branching practices and conditions of redundant workers. The three cases are: the closure of the MG Rover plant in Longbridge, Birmingham, UK in 2005; the large-scale contraction of employment at the Huta T Sendzimira steels works in Nowa Huta, Krakow, Poland in the early 2000s; and the closure of a newly privatised copper

mine in Luanshya, Zambia in 2000. Longbridge offers the most supportive labour market context for labour branching, with Nowa Huta as intermediate and Luanshya the least supportive (Table 1).

Table 1 about here

Redundancy and Labour Branching at MG Rover, UK

The closure of the MG Rover (MGR) plant at Longbridge, Birmingham in April 2005 was the largest corporate closure in the UK since 1980, resulting in the loss of 6300 jobs (Bailey and De Ruyter 2015: 364). It represented the culmination of a long process of decline at the plant following nationalisation in the 1970s and privatisation in 1988. The plant still employed 13,127 people in 1998, meaning that the scale of job loss was greater between 1998 and 2005 than immediately following the closure itself in 2005 (Bailey *et al.* 2008). The wider Birmingham and west Midlands economies were severely affected by deindustrialisation and job losses in the 1970s and 1980s, prior to significant diversification and economic recovery in the 1990s and early 2000s, although higher local concentrations of unemployment persisted around the Longbridge area (Chapain and Murie 2008). As such, what can be regarded as a relatively buoyant regional economy in an international context played an important role in shaping re-employment pathways and outcomes (Table 1) (Bailey *et al.* 2012: 1610). Branching was supported by the establishment of a government Task Force to assist redundant MGR workers and suppliers.

The impact of the Longbridge closure was extensively studied through a longitudinal survey of redundant workers, conducted in three waves in July 2005, December 2005 and April 2008 (Bailey *et al.* 2012). This found that 90 per cent of workers had been re-employed by April 2008, 75 per cent of them on a full-time basis. Bailey *et al.* (2008) identified three different branching pathways: those who found employment quickly after the closure at wave one and remained in continuous employment at wave three; those who were unemployed at wave one, but employed at waves two and three; and those who were unemployed at waves one and two but employed again by wave three. Echoing the findings of other studies, the length of time taken to re-enter the labour market was inversely related to age, the length of service at MG Rover and the level of qualifications (ibid: 24). Younger, more skilled workers and those who were prepared to commute further generally found work more quickly, whereas successful

branching was more problematic for older and lower-skilled workers (Bailey *et al.* 2012: 1603). This points to an important element of ‘iteration’ through the influence of skills and assets carried over from previous employment, while some workers also demonstrated ‘projectivity’ and ‘practical evaluation’ (Emirbayer and Mische 1998) through the take up of training opportunities in particular (Bailey and de Ruyter 2015). Incomes saw an overall decline from MGR, although this masked considerable divergence, with those in managerial positions at MGR performing best in this respect (Bailey *et al.* 2012: 1604).

The process of branching from MGR employment was dispersed across a range of sectors and occupations, involving a shift away from manufacturing to services, although the proportion employed in manufacturing remained double the regional average, alongside related sectors like transport and communications (Bailey *et al.* 2008; 2012). This points to a limited degree of industrial or sectoral relatedness in the labour branching process, reflecting the continued presence of similar and related industries (Neffke *et al.* 2016), although this was insufficient to absorb the majority of displaced workers. Over 60 per cent of those employed at wave three reported using different skills in their jobs from MGR (Bailey *et al.* 2008), indicating that unrelated diversification was widespread. At the same time, those who were using similar skills in their new jobs to MGR earned more and regarded their job quality as higher, meaning that skill relatedness is associated with more positive branching outcomes. Compared to many other redundancies, the branching experience of former MGR workers at Longbridge was relatively positive, particularly in terms of re-employment rates three years after the closure, although it did result in substantial falls in income for many workers. The normative pathway was one of full-time employment in a single job in the formal economy, although many workers had moved between successive jobs since leaving MGR. Policy interventions played an important role in underpinning and supporting the branching process through the provision of assistance and training to redundant workers (Bailey *et al.* 2012).

Redundancy and Labour Branching in Nowa Huta, Poland

The district of Nowa Huta to the east of Krakow was established in 1949 to house workers from the newly built Lenin Steelworks, growing to a population of 223,000 by 1985 (Stenning 2000). The plant, renamed Huta T Sendzimira (HTS) in 1990, experienced three main phases of restructuring in the transition to a market economy (Trappmann 2013). The first saw employment fall from 27,027 to 17,021 workers in 1990-1998 (*ibid.*: 134-135) without

compulsory redundancies through transfers to newly-created subsidiary companies, natural attrition and voluntary redundancy (Hardy and Rainnie 1996). The second phase of state-led restructuring was prompted by increased European Union (EU) pressure, leading to a drastic fall in employment from 17,021 to 9134 workers between 1999 and 2001 (Trappmann 2013: 137). This was followed by privatisation in 2004 when HTS, along with the three other largest Polish steel mills, was purchased by the Indian-owned corporation, LNM Holdings / Mittal Steel (ArcelorMittal from 2006) (Dawley *et al.* 2008). The workforce was reduced further to 4717 in 2008 with additional redundancies made in 2010 and 2012 in response to the effects of the financial crisis and recession (Trappmann 2013: 4; 155-156). Redundancy has been subsidised by the state, EU and company, through the tripartite Steelmakers Social Package (HPS) in 1999-2001, the Steelmakers Activation Package from 2004 to 2006 and Arcelor Mittal Poland in recent years. These 'readaptation benefits' (Fevre 1987) have generally involved redundancy payments and early retirement packages, alongside assistance for retraining and employment placement (Table 1) (Dawley *et al.* 2008: 279). In the context of post-socialist transition, Krakow is generally seen as one of Poland's 'winner' regions experiencing higher levels of economic growth and foreign direct investment and relatively low rates of unemployment (Table 1) (Stenning 2005).

Trappmann (2013: 179) identifies three pathways of redundant steelworkers: those who continued to work in steel subsidiaries; those who took early retirement; and those who left the sector, supported by either a redundancy package or training programme. Many of the older workers opted for early and pre-retirement packages, providing a degree of economic stability and security, although income from pensions was generally below average wages (*ibid.*). Contrary to the expectations of management and trade unions, few workers invested their redundancy money in setting up their own companies with most using it for personal expenditure on property, cars or household goods (*ibid.*: 191). Echoing the plant closure literature, age and qualifications emerge as key assets for re-employment with highly-qualified and younger workers generally finding it easier to secure employment. Common strategies involved working in the informal economy and labour migration, with the former most likely in construction and sales. Labour migration to Western Europe was seen as temporary, income-maximization pathway, based upon limited local employment opportunities and the prospect of higher wages abroad. It involved a considerable degree of 'projectivity' and practical evaluation by migrants (Emirbayer and Mische 1998). In general, the process of branching into new forms of employment demonstrated limited sectoral and skill relatedness to previous

employment in the steelworks, reflecting the profound transition to a post-socialist economy increasingly based upon services (Smith *et al.* 2008). The perception of many former steelworkers and local residents was one of increased economic insecurity and precarity (Stenning *et al.* 2010; Trappmann 2013). In common with the Longbridge case, the aftermath of mass redundancy was also associated with an increased polarisation of incomes between households (Stenning *et al.* 2010).

A common or normative branching pathway has been through livelihood diversification strategies involving portfolio employment based upon the performance of multiple jobs at the same time (ibid). This presents a key mechanism for maintaining household incomes and ensuring social reproduction, given the low paid nature of much work in the post-socialist economy. While primary forms of employment in the formal economy were the most important sources of household income, this was often supplemented by informal and sometimes illegal forms of employment, particularly for poorer households (ibid). This branching strategy was underpinned by the socioeconomic assets of households, namely labour, skills and qualifications, housing, land, citizenship rights and social networks. Access to work often relied on skills and contacts developed through previous employment, providing an element of relatedness, although this was frequently reciprocal and unpaid as indicated by the example of a retired steelworker doing welding work on the allotments of friends and neighbours (Smith *et al.* 2008: 305). Housing was an important asset as larger properties provided surplus space for additional entrepreneurial activities and informal work, as well as for the renting of rooms (Stenning *et al.* 2010). Access to land also contributed through domestic food production, while citizenship rights provided access to pensions and other benefits (Smith *et al.* 2008).

Redundancy and Labour Branching in Luanshya, Zambia

The town of Luanshya is situated on the Zambian Copperbelt which rapidly became “one of the greatest concentrations of industry and urban development on the African continent” from the 1920s (Fraser 2010: 4). After independence in 1964, the Zambian mining industry was nationalized, forming Zambia Consolidated Copper Mines (ZCCM) in 1982. The plummeting price of copper from 1974, however, contributed to a broader economic crisis that led to a 50 per cent fall in per capita income in Zambia between 1974 and 1994 (Fraser and Lungu 2007: 8). Under pressure from the World Bank and International Monetary Fund, the loss-making ZCCM was privatised in seven packages between 1997 and 2000 (Adam and Simpasa 2010).

The Luanshya and nearby Baluba mines were the first to be sold to a consortium led by Binami, an Indian company, and renamed Roan Antelope Mining Company (RAMCOZ). Subsequently, however, the mine went into receivership in 2000 with only 2,500 out of 6,294 workers retained by the state to maintain essential mine services (though it struggled to find the funds to pay their salaries) (Larmer 2005). RAMCOZ was subsequently taken over by J & W Investment / Enya and reopened as Luanshya Copper Mines (LCM) in 2003 as copper prices rose (Adam and Simpasa 2010). The mine was closed again with the loss of 1,740 jobs in January 2009 in response to falling copper prices linked to the global financial crisis and recession, before production re-started under the ownership of the Chinese Non-Ferrous Metal Mining Company (NFC) in December 2009. The re-openings of the mine by LCM and NFC resulted in the re-employment of a minority of redundant miners, often on a casual and short-term basis, fuelling a highly negative perception of the privatised mines (Fraser 2010).

Given the acute crisis of the Copperbelt economy in the late 1990s and early 2000s, based upon the drastic contraction of the pre-displacement industry of mining, the regional labour market was unable to absorb the large-scale redundancies from the Luanshya mine. Accordingly, the normative branching pathway in Luanshya and the Copperbelt involved widespread informalisation, particularly before the payment of terminal benefits to ex-miners in 2003 (Musasa 2010a). This pattern of informalisation was associated with an important shift in gender relations as women and children moved into the informal sector as a means of ensuring household survival, in contrast to the past dominance of formal, unionised male employment (ibid: 197). Reflecting the depth of the economic crisis, net out-migration from the Copperbelt was 6.1% between 1990 and 2000 before declining to 2.5 per cent in 2000-2010 (Central Statistical Office 2013a: 13), with much of this directed to the capital Lusaka rather than the countryside (ibid: 9).

Housing represented an important socioeconomic asset as many ex-miners were offered their houses at subsidised prices, allowing ZCCM and its successors to make up for their inability to pay terminal benefits in full (Musasa 2012). In Patience Mususa's (2010a: 384-385) sample of 56 owners in Luanshya, only four had sold their houses, while half earned rental income from them. In addition, houses provided an important means of subsistence through their backyards with 37 of the 56 households surveyed having a vegetable garden (ibid: 385). Unemployed former miners became engaged in a range of agricultural activities that included growing vegetables, rearing chickens and pigs and fish-farming (Musasa 2012). Many

cultivators were simultaneously involved in other economic activities, particularly trading and the operation of small hair salons.

At the same time, a limited number of ex-miners engaged in more profitable forms of labour branching, involving considerable ‘projectivity’ and ‘practical evaluation’ though their perception and identification of economic opportunities and harnessing of local resources (Emirbayer and Mische 1998). Examples included the claiming of small items from mines when foreign investors were selling off assets and using these to supply the new owners, or deploying capital from redundancy packages to start construction or retail businesses (Mususa 2010a). In addition, household members, particularly women and children, have also become increasingly involved in small-scale and illegal mining activity, particularly the re-mining of tailings from dump sites (Mususa 2010b). In these cases, branching has involved a degree of relatedness to previous mining employment, either through the establishment of new small business based on mining skills, capital and knowledge or through the illegal appropriation of mining resources and materials. The contrast between a minority of former miners and residents who have prospered through the establishment of new enterprises and the struggles of the remainder to ‘get by’ has led to greater socio-economic differentiation in Copperbelt towns such as Luanshya (Mususa 2010a: 385).

5. Practices and Outcomes of Involuntary Labour Branching

The three cases provide distinct time-space contexts for labour branching, not least in terms of the prosperity of the regional economy and the level of socioeconomic development more broadly (Table 1). In the case of Longbridge, economic growth and diversification prior to 2008 generated relatively buoyant demand for workers. While the transition to a market economy in Poland was experienced as a radical break by workers, the growth of the Krakow economy provided employment opportunities, although these often involved increased insecurity and precarity (Stenning *et al.* 2010). Redundancy in Luanshya coincided with the collapse of the Copperbelt economy, creating acute poverty and distress for former mineworkers and their families, particularly prior to the recovery of the mining sector from 2004. While the economies of the Krakow and West Midland regions have evolved through processes of uneven economic growth and diversification, principally from manufacturing to services, the experience of the Copperbelt economy in the 1990s and early 2000s was more akin to regional economic involution, defined as a form of economic degeneration in which an

economy feeds upon itself (Burawoy 1996: 1109; Geertz 1963), driving residents into the informal sector as a survival strategy.

With reference to the four dimensions of practice outlined earlier (Jones and Murphy 2011), redundancy was generally perceived as a profound rupture by workers across the three cases, involving considerable dislocation and shock, particularly in Luanshya and Nowa Huta. Generally, redundancy and subsequent labour branching entailed increased insecurity and precarity, reflecting the loss of secure industrial employment and associated identities. This was most pronounced in Luanshya with Ferguson (1999: 236-237) characterising the experience of Copperbelt residents as one of ‘abjection’, by which the perceived expulsion of miners and their families from capitalist modernity led to feelings of “debasement and humiliation” (ibid: 236) as well as “anger and betrayal” (Sutcliffe 2012: 3). Social expectations of continued material progress, development and modernity were confounded by the economic involution of the Copperbelt, causing profound social and psychological dislocation (Ferguson 1999). More generally, as outlined below, the qualities of workers also shaped the labour branching process in relation to both their demographic characteristics and access to key assets and resources.

Contrary to the predictions of neo-classical economic theory, all three cases demonstrate the prevalence of *in situ* forms of labour branching over out-migration to other regions, although there is some evidence of the latter. Each case provides some evidence of normative branching pathways (Campeanu and Fazey 2014), involving: reemployment in the formal economy in Longbridge, often in services; livelihood diversification through a combination of formal employment and informal activities in Nova Huta; and a reliance on the informal sector in Luanshya. As such, a sharp formal-informal economy gradient was evident between Longbridge and Luanshya with Nova Huta occupying an intermediate position (Table 1). This reflected the greater absorptive capacity of the labour market in Longbridge and, to a lesser extent, Nova Huta, compared to the drastic contraction of the Copperbelt economy. Generally, echoing the plant closure literature, older workers were more likely to be unemployed and economically inactive, whereas younger and more skilled workers were usually quicker and more successful in securing new employment. This emphasises the importance of the iterative dimension of agency in shaping branching outcomes through the influence of inherited characteristics and skills. The cases also indicate that more successful outcomes tended to be associated with higher levels of ‘projectivity’ and practical evaluation through the

identification and appraisal of emerging economic opportunities (Emirbayer and Mische 1998). Despite the prevalence of *in situ* forms of branching, elements of time-space expansion (Katz 2004) were apparent in all three cases, including increased local commuting in Longbridge, commuting to other parts of the Krakow region and labor migration to Western Europe in Nowa Huta, and out-migration from the Copperbelt, particularly to the Lusaka region.

The experience of collective industrial employment generated a set of social expectations and norms around wage labour (see Hudson 2005) which tended to persist after redundancy in Longbridge and Nowa Huta, but which were structurally undermined by the involution of the Copperbelt economy. In the Nowa Huta case, the actual branching performance of workers confounded the institutional expectations of trade union and state officials that the establishment of new businesses would be the prevalent response of redundant workers (Trappmann 2013). Illegal mining is seen as morally legitimate as well as economically necessary by Luanshya residents in view of widespread resentment about the uneven distribution of benefits between local communities and investors and the inability of the state to re-distribute resources and promote local development (Mususa 2010b). This resentment sparked a new wave of grassroots militancy and fuelled the political rise of the Popular Front as a major political force.¹ The supporting role of policy and institutional intervention was most evident in Longbridge through the establishment of the Government Task Force and availability of unemployment benefits, while ‘readaptation benefits’ were widely available in Nova Huta. In Luanshya, by contrast, such support was lacking beyond the delayed payment of terminal (redundancy) benefits by the private owners and the provision of subsidised housing (Table 1).

With reference to power relations, processes of labour market restructuring assumed a broadly neoliberal form across the cases, involving a tilting of labour market structures towards employers’ interests and away from labour protection and job security, emphasising the need for flexible and adaptive workforces able to respond readily to the demands of firms and investors (Fraser 2010; Smith *et al.* 2008). This was most apparent in Luanshya and Nowa Huta, though mediated somewhat in the Longbridge case by institutional and policy support. The three cases highlight the agency and labour power of workers in different circumstances, particularly through the mobilisation of underlying assets such as skills, knowledge, land and property and access to private transport. Branching largely occurred through everyday tactics of ‘making do’ and ‘getting by’ (Stenning *et al.* 2010), though a minority of more strategic

responses were also evident, including labour migration to Western Europe from Nowa Huta, entrepreneurship in Luanshya and retraining in Longbridge. In Longbridge and Krakow, regional economic growth generated labour demand which was absent in Luanshya prior to the revival of mining from 2003. At the same time, the degree of industrial and skill relatedness was generally limited across the cases, reflecting the wider contraction of the pre-displacement industries and the limited presence of related industries (Neffke *et al.* 2016).²

6. Conclusions

The approach of this paper has been to open up the rather taken for granted concept of adaptation in EEG. Through an engagement with the labour geography, practice and livelihoods literatures, I have sought to develop a richer and more socialised conception of adaptation as an ongoing process of responding to unfolding challenges and disturbances, linked to a concern with more diverse forms of social agency (Pike *et al.* 2016). This has been advanced through the notion of labour branching, inspired by research on regional industrial branching (see Neffke *et al.* 2011). It was defined as the movement of workers from previous forms of employment into new jobs and economic activities. In focusing on the involuntary dimension of labour branching, my aim was to synthesise key strands of existing research on plant closure and livelihood diversification and link them to EEG debates on adaptation and regional branching. The underlying concern is one of incorporating labour more fully into EEG research (Dawley *et al.* 2014), not only as an element of a broader process of industrial branching, but on its own terms, serving to also wider the scope of branching research beyond firms, industries and technologies.

As demonstrated by all three cases, the movement into new economic activities and employment is a necessary, defining feature of labour branching, supported by the utilisation of pre-existing socio-economic assets and resources. Interestingly, the degree of industry and skill relatedness generally proved limited compared to the emphasis on technological or skill relatedness in the industrial branching literature. This reflects the fact that redundancy was linked to the broader decline of pre-displacement and related industries (Neffke *et al.* 2016). In the Longbridge and Luanshya cases, relatedness to previous employment was associated with more positive branching outcomes, although these took quite different forms. By contrast, the degree of industry and skill relatedness is likely to be greater for voluntary forms of labour

branching based upon the continued presence of the pre-movement and related industries, enabling workers to shift between similar jobs (Boschma *et al.* 2009). As this indicates, labour branching involves an important element of ‘fit’ between workers’ livelihood strategies and broader processes of regional economic evolution. More specifically, the restructuring of local and regional economies generates forms of labour demand which present workers with sets of opportunity structures that are segmented by the demographic characteristics and assets of labour. This feeds back into the process of regional economic evolution (Figure 1), often by reinforcing and extending the nature and direction of on-going forms of restructuring.

Finally, it is important to acknowledge that the notion of labour branching remains rather under-developed in comparison to the established concept of regional (industrial) branching, requiring further research to advance beyond the initial elaboration and exploration offered in this paper. Four strands of a future research agenda are identified here. First, there is scope for further work investigating how labour branching pathways are shaped by specific time-space contexts and dimensions of practice (Figure 1), particularly in terms of how the actual performance of branching is influenced by the combined influences of workers’ perceptions and qualities, the demand for labour, the availability of state support and patterns of rules and norms. Second, the question of industrial and skill relatedness between the old and new forms of employment is of particular interest from a branching perspective. While unrelated diversification was widespread in the cases outlined above, there is a need to link this more systemically to the changing industrial composition of regional economies (Neffke *et al.* 2016). The question of whether voluntary forms of labour branching demonstrate a greater degree of relatedness is also worthy of further investigation (Boschma *et al.* 2009). A third issue concerns the outcomes of labour branching for workers in terms of income, skills and job quality. While research indicates that involuntary branching tends to be associated with lower incomes, reduced use of skills and poorer job quality for many workers (Bailey *et al.* 2012; Dobbins *et al.* 2014), the outcomes of voluntary labour branching have received less attention, although they are more likely to involve improved or at least equivalent pay and conditions given the relatively ‘unforced’ choice of workers to move jobs (Boswell *et al.* 2012). A fourth area of interest is the implications of labour branching pathways for the evolution of regional economies. While a fuller consideration of this question is beyond the scope of this paper, the case studies suggest that involuntary labour branching tends to reinforce on-going trajectories of economic restructuring. This requires further research, alongside studies of the contribution of voluntary labour mobility to processes of regional industrial branching.

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Notes

¹ Led by the veteran politician Michel Sata, the rise of the Popular Front in Copperbelt and Zambian politics in the 2000s was based on the mobilisation of a populist economic nationalism against foreign investors, leading to Sata's victory in the 2011 Presidential elections (Cheeseman and Larmer 2015).

² Although mining in the Copperbelt and automotives in the Midlands have subsequently experienced significant economic recoveries (Adam and Simpasa 2010; Amison and Bailey 2014).

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