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# Directionality and subsidiarity: sustainability challenges in regional development policy

Markus Grillitsch<sup>a,b</sup> , Lars Coenen<sup>c,d</sup> and Kevin Morgan<sup>e</sup>

## ABSTRACT

This paper investigates how regional development policy can combine directionality in addressing societal challenges with subsidiarity, emphasising local participation and engagement. We revisit the theoretical foundations of the ‘entrepreneurial discovery process’ as the main mechanism for local engagement in current European Union regional policy frameworks. In its place, we propose an alternative theory of change with purposive collective action at its centre and discuss (1) how it differs from the entrepreneurial discovery process in terms of opportunity framings, scope for agency and balancing directionality with subsidiarity; and (2) why it is more effective in fostering sustainable regional transformations.

## KEYWORDS

regional development policy; Smart Specialisation; sustainability transitions; discovery process; regional development; policy agency

JEL O10, O20, O38, R10, R58

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## 1. INTRODUCTION

There is growing appreciation in academic and policy worlds that innovation policy needs new directionalities to address sustainability challenges.<sup>1</sup> Typical examples of challenge-oriented frameworks are mission-oriented innovation policies (Mazzucato, 2018) or transformative innovation policies (Schot & Steinmueller, 2018). In spite of conceptual, practical and normative differences, these frameworks share a strengthened explicit focus on *directionality* in innovation and development geared towards solving, or at least addressing, sustainability challenges. But whereas directionality has become front and centre in this new wave of policy frameworks, far less attention has been given to considerations of scale. Typically, missions and transformative innovation policies are primarily framed and implemented as national or supranational policies while neglecting local and regional levels (Butzin et al., 2024; Cappellano et al., 2023; Henderson et al., 2024). As a consequence, the turn towards directionality in innovation policy has been criticised for remaining top-down, lacking considerations of legitimacy and

responsibility (Coenen & Morgan, 2020; Flanagan et al., 2022). Questions such as how to achieve broad stakeholder involvement, cater for transparent selections of (policy) priorities and evaluate transformative outcomes/missions are yet to be resolved (Haddad et al., 2022; Rohrer et al., 2022).

In parallel, an orientation towards sustainability challenges features increasingly in literature about regional innovation systems and policies (Benner, 2022; McCann & Soete, 2020; Tödtling et al., 2022). There is a growing demand for a new generation of regional development policies which delivers not only on competitiveness and economic growth but also on more sustainable environmental and social outcomes. This demand is apparent, but not resolved, in different experimental regional policy framings of the European Commission in response to among others the European Green Deal and UN 2030 Agenda, notably Smart Specialisation for Sustainable Development Goals (S3+) and the pilot programme Partnerships for Regional Innovation (PRI) (Bianchi et al., 2024; Miedzinski et al., 2021; Pontikakis et al., 2022).

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As challenge-driven innovation policies and, relatedly, concern with directionality, are becoming increasingly popular and commonplace across different levels of policymaking, considerations around subsidiarity cannot be ignored. To justify how the 'division of work' between levels should be organised and to ensure that decisions are to be taken *as closely as possible to the citizens* – the basic premise following the subsidiarity principle in multilevel EU policies – a calibration of directionality and subsidiarity is overdue. On the one hand, the calibration of directionality with subsidiarity becomes more intricate with the call for regional development policies to contribute to overarching sustainability goals articulated top-down through global, European or national priorities. On the other hand, regional development policy is a way to realise subsidiarity as sustainability challenges often are wicked problems (Rittel & Webber, 1973), which require the participation of multiple stakeholders to explore and negotiate challenges and their solutions specific to local circumstances (Wanzenböck & Frenken, 2020).

New experimental regional development policy framings such as S3+ and PRI build on the experiences gained with Smart Specialisation Strategies (S3), in particular by the way stakeholders are involved through the entrepreneurial discovery process (Pontikakis et al., 2022). S3 is the largest and most encompassing innovation-based regional development approach ever in the European Union (EU) (Radosevic et al., 2017; Asheim et al., 2017). At its core, S3 introduced the entrepreneurial discovery process as a new way of stakeholder engagement to identify new domains of economic activity, which consequently inform policymakers which areas of economic activity to prioritise (Foray, 2014; Foray et al., 2009; Hausmann & Rodrik, 2003). From its inception to its implementation during a full programming period of the EU from 2014 to 2021, scholars have scrutinised S3, practitioners have learned and the S3 approach has mutated in the process (Capello & Kroll, 2018; Foray, 2019; Hassink & Gong, 2019; McCann et al., 2017; Radosevic et al., 2017).

The most important change for the new EU programming period starting in 2022, however, is the widespread acknowledgement that, as well as promoting economic development, regional development policy needs to address sustainability challenges such as climate change and inequalities, which are threatening human civilisation and constitute a deep, interconnected double crisis (Donald & Gray, 2019; McCann & Soete, 2020). For this reason, the European Commission has started to experiment with new regional innovation policy approaches, such as S3+ and PRI (Miedzinski et al., 2021; Pontikakis et al., 2022). Both policy framings build on the positive experience with S3, and in particular the entrepreneurial discovery process 'to engage with stakeholders for strategic tasks, such as vision development, priority setting, project development, implementation and monitoring and evaluation' (Pontikakis et al., 2022, p. 39).

Sustainable development is described as S3+ and PRI's 'guiding star' and their aim is to achieve this by reference to the roadmap of the United Nations' (UN) Sustainable

Development Goals (SDGs). If the SDGs offer a generic direction of travel, more granular directionality is driven by:

the strategic framework policies that have been agreed at the EU level (such as the European Green Deal, Cohesion Policy, the EU missions, the Recovery and Resilience Facility, etc.) and adopted and adapted at national and subnational levels in the spirit of subsidiarity.

(Pontikakis et al., 2022, p. 34)

Among other things, S3+ and PRI seek to imbue the discovery process with a new sense of purpose to achieve sustainability objectives and to broaden engagement and co-creation considerably to include new sets of stakeholders. The Joint Research Centre (JRC) argues that there are 'good reasons to believe that challenge-oriented partnerships can provide the right combination of bottom-up knowledge and actions with top-down changes in regulation and shifts in the policy mix that permit transformative, system-level innovation to happen' (p. 41). The entrepreneurial discovery process, however, has remained the main mechanism for local engagement, and priority setting, and thus for catering for the principle of subsidiarity.

Overall, the shift from current regional development policies towards the new generation of policies essentially implies a shift in focus from discovering and exploiting opportunities for economic growth and competitiveness towards societal needs and challenges (Isaksen et al., 2022; Tödtling et al., 2022). The relevance of innovation remains but the aim is to refocus it on sustainability (McCann & Soete, 2020). This shift raises, however, pertinent questions about the purpose, impact and dynamics of innovation (Coenen & Morgan, 2020), whether sustainability is merely an additional requirement for innovation and, consequently, the entrepreneurial discovery process, or if it marks a need to fundamentally rethink what kind of innovations are needed and/or whether the centrality of sustainability challenges requires a more profound reconceptualisation of entrepreneurial opportunity and discovery. Specifically, it invites for critical reflection on the economic, narrowly conceived form of innovation and mobilisation of triple helix actors limited to firms, research organisations and public authorities prevalent in the existing S3 paradigm and related entrepreneurial discovery process.

The adopted approach in this paper is to first elaborate on the theoretical implications of a shift towards sustainability challenges in regional development policy, in terms of calibrating directionality and subsidiarity. Then, we discuss and reassess the theory of change implied by the entrepreneurial discovery process as a central mechanism to realise subsidiarity by engaging local actors in setting priorities and identifying opportunities for regional innovation and transformation in S3 and new experimental policy framings such as S3+ and PRI. This theory of change is then contrasted with an alternative theoretical perspective, which we frame as purposive collective action

(PCA). Being a boundary objective between theory and practice, the notion of entrepreneurial discovery has always carried a high degree of ambiguity, with changes in theorising and policy practice over time (Kroll, 2015; Kyriakou et al., 2016; Mariussen et al., 2019). With the aim to problematise and contrast theoretical positions (Alvesson & Sandberg, 2011), we, on the one hand, elaborate on a rather narrow economic interpretation of the entrepreneurial discovery process constituting a key organising principle for policymaking in combination with evolutionary ideas of relatedness and regional branching in regional knowledge and capabilities structures (Boschma & Frenken, 2011; Foray, 2014; Foray et al., 2009; Neffke et al., 2011). On the other hand, the theoretical perspective on PCA provides a broad perspective of societal change in regional transformations and is informed by recent advances in understanding the role of human agency in regional transformations (Beer et al., 2021; Bristow & Healy, 2014; Grillitsch & Sotarauta, 2020; Isaksen et al., 2019; Moulaert et al., 2016). The discussion demonstrates why challenge-oriented regional policies require a broader theoretical perspective about regional transformations that allows to recalibrate directionality and subsidiarity, and to deliver more effectively on finding productive problem-solution nexuses in pursuit of addressing sustainability challenges.

## 2. THEORETICAL IMPLICATIONS OF A SHIFT TOWARDS SUSTAINABILITY CHALLENGES IN REGIONAL DEVELOPMENT POLICIES

The tension between top-down priority setting, and place-based regional development processes requires resolving the policy paradox of combining the principles of directionality and subsidiarity, where the challenge is to manage ‘the tension between directionality and freedom to experiment’ (Foray, 2023, p. 7). The principle of subsidiarity suggests that an action shall be implemented at the level of the EU:

if the objective of the proposed action cannot be sufficiently achieved by the Member States either at central level or at regional and local level, but can rather, by reason of the scale or effects of the proposed action, be better achieved at Union level.

(Art. 5(3) of the Treaty on European Union)

Yet, the subsidiarity principle also suggests that ‘decisions are taken as closely as possible to the citizen’ (Art. 10(3) of the Treaty on the European Union). In the case of sustainability challenges such as climate change, directionality is often articulated top-down for instance through Sustainable Development Goals and the European Green Deal. Yet, Wanzenböck and Frenken (2020) argue that local contexts are more conducive to negotiating concrete problems and solutions and related contestations around sustainability challenges. So, even though the great challenges of our times such as climate change and uneven

development are linked to global processes, as well as the global governance of economic activities, the principle of subsidiarity may still imply that local and regional levels have an important role in deliberating and exercising directionality.

Yet, it remains largely ignored how the top-down articulation of directionality can be reconciled with a place-based regional development approach empowering local citizens. This is surprising in a context where increasing citizen discontent make the governance of transformations difficult, exemplified by the Yellow Vest movement in France, anti-EU sentiments or protest votes in many countries. In the established policy framing, the focus lies on competitiveness and growth opportunities, to be discovered by regions. While this focus is now contested considering the urgency of global sustainability challenges, it has been reiterated for instance in the recent Draghi (2024) report on the future competitiveness of Europe. In the context of this policy framing, the place-based policy approach strengthened subsidiarity by emphasising the importance of local knowledge in identifying and exploiting opportunities based on context specific preconditions, thereby stimulating regional growth and competitiveness (Barca, 2009). One of the main advances was that directionality in terms of regional development priorities was relegated to local and regional stakeholders rather than articulated in one-size-fits-all priorities with focus on some sectors, such as life science, semiconductors or artificial intelligence. The idea was that this should enhance the possibilities of all regions to identify opportunities, which are relevant and reachable with their specific preconditions and capabilities thus also promoting economic and social cohesion in Europe. Besides, in theory, valorising the uniqueness of all regions, the place-based approach removed the spatial bias of top-down directionality on specific sectors. For instance, only few regions can benefit of opportunities in the life science, semiconductor or artificial intelligence sectors.

With the recognition of the pressing environmental crisis, the European Commission made a remarkable shift towards a challenge-oriented approach. For the first time, the European Commission – with the European Green Deal and European Growth Model – provided strong directionality in terms of shaping the opportunity space in favour of certain sectors and economic activities labelled as green and/or digital. It also provided a direction for technological change through the respective allocation of research funds. The conundrum is that the challenge-oriented European Green Deal with its top-down directionality still sits firmly in a rather narrow, economist, opportunity-oriented frame. It basically calls for local and regional actors to identify new growth opportunities in what the European Commission labelled green and digital, including all the contestations that come with it (for instance, the labelling of nuclear power as green).

The first and obvious implication relates to one of the core problems the place-based approach has tried to address, namely the spatial bias of policies that promote certain industries or economic activities. In a recent

paper, Rodríguez-Pose and Bartalucci (2024) clearly unveil the high regional variation in terms of opportunities and threats related to the European Green Deal. The analysis shows that the directionality exercised by the European Green Deal implies higher risks and fewer opportunities for those regions, which are already lagging behind in terms of economic development, thus further exacerbating regional disparities. In other words, the opportunity space is tilted in favour of regions, which have the (innovation) capabilities to grasp green and digital opportunities. This ties in with the innovation paradox that those regions needing innovation most are the least capable to generate them (Oughton et al., 2002) and the observation that Smart Specialisation was least able to deliver in lagging regions (Hassink & Gong, 2019; Marques & Morgan, 2018).

A second implication is that the established regional policy approach manifested in Smart Specialisation and the entrepreneurial discovery process is defective in terms of both substance and process: the substantive shortcoming is that it focuses on a narrowly conceived form of innovation neglecting for instance social innovation; and the process is deficient because the primary agents are narrowly conceived as basically the economic partners in the triple helix – firms, local/regional government and universities, while neglecting fringe actors and vulnerable groups. By broadening the discovery process the JRC experiment with the PRI deal with this issue as the following quote illustrates:

The second building block, an Open Discovery Process, enables engagement, deliberation and path co-creation with variable sets of stakeholders, repurposing the established participatory governance approach of Smart Specialisation towards sustainability, and also introducing new ways of working across silos, working backwards from desired economic, societal and environmental goals. Compared to the Entrepreneurial Discovery Process in Smart Specialisation, it more fully enables engagement with stakeholders, such as vulnerable groups affected by the transformation, users, grassroots and civic society organisations, among others. The specific composition of actors depends on the specific sustainability challenge.

(Pontikakis et al., 2022, p. 6)

Considering the continued competition and growth-oriented frame in the European Green Deal and European Growth Model, the ambitions of the PRI may be hard to realise.

The third implication is that the established regional development policy paradigm, where local actors should innovate in a top-down reconfigured opportunity space, neglects that sustainability challenges are often associated with social contestations about the framing of problems or potential solutions, requiring a broader approach on societal transformation rather than merely seeking technological solutions (Peters, 2017; Rittel & Webber, 1973). Furthermore, this paradigm entails a risk for capture by ‘fit-and-conform’ niche innovation rather than ‘stretch-

and-transform’ patterns of consumption and production (Haarstad et al., 2022; Smith & Raven, 2012). The ‘fit-and-conform’ relates here to finding an economically viable niche within opportunity structures that are articulated top-down. In contrast, Smith et al. (2016) remind us that niche innovation was conceived as a convening space for experimentation, which is purposefully shaped by human agency and valued different cognitive frames and conceptual assumptions, and some of the more critical implications of niches for prevailing institutions. Hence, the idea of niche innovation was conceived as a mechanism to challenge existing opportunity structures from bottom-up. However, the application of niche innovation since then has tended to emphasise the more pragmatic, technical lessons about how to make sustainable innovations fit into and better conform with prevailing opportunity structures (Smith et al., 2016).

What we see, therefore, is that the European Green Deal manifests a shift to challenge orientation at the European level, while still articulating a rather narrow, economic, growth and opportunity-oriented approach at the regional scale, that is, the idea that regions should continue seeking growth opportunities, but in areas that are predefined as green and digital. Tensions between directionality and subsidiarity, which the place-based regional policy approach attempted to solve, have re-emerged, and the contested nature of societal challenges remains ignored. In the context of the urgent need to address societal challenges, the directionality–subsidiarity conundrum needs a new resolution. To achieve this, we argue that we need to critically examine the foundations of the current regional development policy paradigm, including the underlying theory of change.

### 3. THEORIES OF REGIONAL CHANGE

The theory of regional change underlying the current regional development policy paradigm is distilled in the notion of the entrepreneurial discovery process. The entrepreneurial discovery process is at the heart of gathering local knowledge, setting priorities, and tailoring interventions to the opportunities of particular places. The theoretical understanding of the entrepreneurial discovery process has changed over time, and there are different perspectives on it (Kyriakou et al., 2016; Mariussen et al., 2019). Furthermore, the diverse policy practices of implementing entrepreneurial discovery processes do not necessarily match the theoretical understandings (Kroll, 2015). The entrepreneurial discovery process is, thus, a boundary object between theory and practice, as well as between past and current understanding. The notion of entrepreneurial discovery has always carried a high degree of ambiguity, and it is not the aim of this paper to resolve this ambiguity. Rather, for conceptual clarity, we focus on the formulation of the underlying theory how the entrepreneurial discovery process induces regional change as expressed by one of the founding fathers of the Smart Specialisation approach, Dominique Foray. We make this choice because Foray articulates a rather narrow



economic interpretation of the entrepreneurial discovery process, which is well suited to be contrasted with a broader perspective on regional transformations for which we suggest the notion of PCA. We use the notion of PCA as a guiding theory of change where local actors engage collectively and shape opportunity spaces as they interact with their environment to make future development paths possible that align with sustainability imperatives. This theory of regional change is informed by various streams of literature on human agency, institutional change, and governance of transitions. Also, the notion of open discovery process in the PRI approach resonates with this alternative perspective. We aim to generate insights through articulating contrasting theoretical positions and problematisation (Alvesson & Sandberg, 2011), while acknowledging differences and middle-ground positions in existing academic writings and policy practice, including broader interpretations of entrepreneurial discovery processes.

### 3.1. Theoretical foundations of the entrepreneurial discovery process

The idea of the entrepreneurial discovery process has its roots in economic theory. Foray (2014) foregrounds that entrepreneurial discovery is essentially a process that generates information and knowledge about new domains of opportunity for innovation and economic activities. Foray refers in his article to the work of Hirshleifer (1971, p. 562) who discusses the nature of discovery, which is the 'correct recognition of something that possibly already exists, though hidden from view'. Furthermore, Hirshleifer argues that 'Nature will not autonomously reveal the information; only human action can extract it' through the process of discovery. The process is necessary because market mechanisms and prices do not necessarily allocate resources efficiently. There is a latent opportunity for generating higher economic returns, about which, however, economic actors have no information or knowledge. Hence, entrepreneurial discovery processes are necessary to identify these latent opportunities. This resonates with the view of Kirzner (1997, p. 62) who suggests that the entrepreneurial discovery process is about 'gradually but systematically pushing back the boundaries of sheer ignorance'.

It is worth noticing that this understanding of discovery resonates with how discovery is defined in common language, namely as 'the act of finding something that had not been known before'.<sup>2</sup> In our discussion, we focus on the relation between the action (the act of finding or learning) and the object; this is to say the thing that is found. Typically, the implicit assumption is that the object exists independently of the action, it exists independently of it being discovered or not. For instance, when it is said that Christopher Columbus discovered America, then he happened to find land that existed independently from his discovery.<sup>3</sup>

Another source of inspiration for the entrepreneurial discovery process is the work of Hausmann and Rodrik (2003) who argue that economic development is not a

simple function of good institutions and access to foreign technology but that nation states develop in very specific ways, building on their existing capabilities, and moving into specific domains of economic activities where they can develop competitive advantage. For this to happen 'learning what one is good at producing' (p. 605) is essential. The observation the authors make is that 'industrial success entails a concentration in a relatively narrow range of high-productivity activities [and that] the specific product lines that eventually prove to be hits are typically highly uncertain and unpredictable' (p. 623). The entrepreneurial discovery process is the mechanism to identify these specific activities in which a country can be competitive. The identification of these specific activities will have high social value because this information will easily travel and allow other actors to move into this area. Governments then need to 'encourage entrepreneurship and investment in new activities *ex ante* but push out unproductive firms and sectors *ex post*' (p. 629) to facilitate the development towards higher value-added activities.

Building on these ideas, Foray et al. developed a version of the entrepreneurial discovery process for the context of regional development policy. Foray (2014, p. 495) suggests that the entrepreneurial discovery 'precedes the innovation stage and consists of the exploration and opening up of a new domain of opportunities (technological and market), potentially rich in numerous innovations that will subsequently occur'. It is important to note that the domains of opportunities against the background of economic theory are seen as existing objectively and independently of them being discovered. Theoretically, the main issue here is the lack of information or knowledge about the new domains of opportunities.

This resonates with writings in entrepreneurship theory. Shane and Venkataraman (2000, p. 220) argue:

[t]o have entrepreneurship, you must first have entrepreneurial opportunities. ... Although recognition of entrepreneurial opportunities is a subjective process, the opportunities themselves are objective phenomena that are not known to all parties at all times. For example, the discovery of the telephone created new opportunities for communication, whether or not people discovered those opportunities.

Hence, the object of the discovery process, an entrepreneurial opportunity is thought to exist independently from the entrepreneur, even though people may have different opinions about the existence of an entrepreneurial opportunity. The success or failure of an entrepreneurial venture will generate economic knowledge about what works (Foray, 2014).

It is the discovery of such independently and objectively existing (but not known to everybody) opportunities that will then 'generate knowledge about the future economic value of a possible direction of change' (Foray, 2014, p. 495). In line with the argument of Hausmann and Rodrik (2003) for nation states, Foray (2014) argues that knowledge of new domains of opportunities will spread quickly to other actors in the region, thus creating positive

externalities – a market failure that justifies public intervention to promote entrepreneurial discovery processes. Furthermore, to grow and reach full potential, ‘resources must then be concentrated on a small number of new activities, which will therefore be priorities, in order to reach the critical thresholds and minimum efficiency scale that will allow these activities to develop’ (p. 499).

The idea of entrepreneurial discovery processes in the regional context was neatly complemented with the simultaneously blossoming literature on evolutionary economic geography, which explored the notions of relatedness and regional branching. Accordingly, regional development is theorised as a branching process where firms diversify based on existing competences into new fields (Frenken & Boschma, 2007). For this reason, it is most common that regions diversify into areas where they already have related competences, which has been also coined with the notion of the ‘principle of relatedness’ (Hidalgo et al., 2018). Again, this resonates with the reasoning of Hausmann and Klinger (2006, p. 25) ‘the speed at which countries can transform their productive structure and upgrade their exports depends on having a path to nearby goods that are increasingly of higher value’. From these insights, policy guidance for Smart Specialisation was developed according to which the entrepreneurial discovery processes could be directed to the areas where regions have the highest likelihood of success based on existing capabilities (Balland et al., 2019). Recently, Foray et al. (2021) reiterate that priority setting and the analysis of the nexus between existing capacities and opportunities follow a top-down logic (directionality), whereas subsidiarity is realised through identifying and implementing pathways that work locally.

### 3.2. Theoretical foundations of PCA

PCA captures a theory of change in which regional actors, mostly in interaction with non-local actors, play an important role through their collective and intentional engagement at different scales to shape opportunity spaces and to make future regional development paths possible that align with sustainability imperatives. PCA resonates with the notion of open discovery process, which has societal well-being and sustainability as purpose and signals the activation of broad actor coalitions to achieve this purpose (Pontikakis et al., 2022). It also builds on a body of work on path creation and change agency according to which sets of actors strategically engage to realise new economic trajectories (Garud et al., 2010; Simmie, 2012). PCA is informed by literature on the governance of transition and multi-actor processes, captured by notions such as orchestration (Gordon & Johnson, 2017) or place-based leadership (Sotarauta & Beer, 2021), which unveil how sets of actors coordinate for some joint purpose. In the scope of this paper, it is not possible to provide a detailed account of all related concepts and approaches, which can inform PCA as a theory of change. Our aim in this paper is to elaborate on key aspects that differentiates PCA from the traditional view of the entrepreneurial discovery process relating to the three implications elaborated in section

2, namely the framing of opportunity, the scope of agency, and resolution of tensions between directionality and subsidiarity.

#### 3.2.1. Framing of opportunity

PCA embarks from a fundamentally different theoretical starting point than the economic interpretation of the entrepreneurial discovery process presented in section 3.1. Instead of seeing opportunities as something to be discovered, something that exists but about which human actors lack information and knowledge, PCA emphasises the role of human agency in reproducing and transforming the structures, which opportunities consist of (Grillitsch & Sotarauta, 2020). Many of these structures are socially produced such as knowledge, networks, institutions and physical infrastructure, and can thus be changed through human actions.

This relates to an emerging theoretical perspective in entrepreneurship, which stipulates that environments are not discovered but created, and thus can be influenced by human agency (Engel et al., 2017). Berglund et al. (2020, p. 825) argue that the ‘dominant view has long been that entrepreneurship concerns the discovery and exploitation of profit opportunities that exist independent of individuals because markets are not in equilibrium’ and that this view provides little insight in how entrepreneurs manage uncertainty. In contrast, the authors propose that entrepreneurship is a process where opportunities are iteratively developed as entrepreneurs engage with their environment. This means that there are two contrasting theoretical propositions in entrepreneurship theory: (1) the idea that opportunities are discovered but in principle exist independent from the entrepreneur; and (2) the idea that opportunities are created as the entrepreneur interacts with the environment. Even though the latter resonates better with the idea of PCA, there are important differences. PCA in regional development requires a more differentiated perspective on opportunity because some elements of the environment are typically outside the sphere of influence of local actors such as macro-level institutional trends or technological breakthroughs, while local actors have means to shape other elements of their environment, such as the local support infrastructure for innovation and entrepreneurship.

A differentiated perspective is provided by the idea of a stratified opportunity space. In the context of regional development processes, Grillitsch and Sotarauta (2020, p. 714) suggest three layers of opportunity space. First, the time-specific opportunity space, which ‘[d]elineates what is possible given the global stock of knowledge, institutions, and resources at any moment in time’; second, the region-specific opportunity space, ‘which [d]efines what is possible considering regional preconditions’; and, third, the agent-specific opportunity space, which ‘[c]aptures perceived opportunities and capabilities of individual agents to make a change’. A stratified conceptualisation of opportunity spaces, on the one hand, acknowledges that some mechanisms operate at the extra-regional scale and are often outside the sphere of influence of local

actors. For instance, Grillitsch and Rekers (2016) show for the case of medical technologies how institutional changes at the European and national levels cascade down to affect local learning dynamics and thus innovation. Relatedly, Coenen et al. (2015), in a study on biorefining, find that even if a region is technologically world-leading, it may be impossible to harness such advantages when important regulations and the legitimisation of the technology are largely shaped outside the region and when corporate identities, negotiated in non-local headquarters, are not aligned with the value propositions of the emerging biorefining industry.

On the other hand, this stratified conceptualisation appreciates that local actors can take on different roles to shape the region-specific (place-based) and actor-specific levels of opportunity spaces over time (Martin et al., 2023; Sotarauta et al., 2020). This becomes apparent in cases where a transformative change took place in the absence of favourable preconditions. A classic example is the study of Saxenian and Sabel (2008) about the New Argonauts, which illustrates how individual actors had built their capabilities abroad in Silicon Valley and later shaped the Taiwanese semiconductor industry. This included the transformation of the regional and national preconditions, and the institutionalisation of a venture capital industry. However, even in places that have a strong innovation ecosystem, such as the Basque Country in Spain, Kamath et al. (2023) show that transformative change towards a green economy requires the social engagement of actors to legitimise and create momentum for a new direction in regional development.

Opportunity spaces, understood as the structures that make certain development pathways possible, while closing doors for others, consist both of soft elements such as informal institutions, mindsets, local cultures and narratives, as well as hard elements such as capabilities, resources and physical infrastructure. Soft elements such as dominating narratives affect opportunity spaces for instance by legitimising certain actions while penalising others, and thus also influence the distribution of resources (Heiberg et al., 2020). Opportunities that local actors perceive are shaped by regional social filters, which are historically developed and consist of a deeply institutionalised legitimisation of existing practices (Kurikka et al., 2022). Therefore, a change in mindsets, local cultures or narratives is often required to set in motion a change processes that then also influence the hard elements (Rekers & Stihl, 2021), and such a change is a social and political process that goes beyond the technicalities of the entrepreneurial discovery process (Sotarauta, 2018).

### 3.2.2. Scope of agency

The underlying theory is that transformations in regions result from the social engagement of local and non-local actors who shape opportunity spaces, which implies a more capacious scope for agency. One way to approach this is to broaden the notion of innovation from technological innovation to social innovation. Marques et al.

(2018, p. 500) propose three distinct features of social innovation:

[F]irst, it actively promotes inclusive relationships among individuals, especially those that are (or have been) neglected by previous economic, political, cultural or social processes. ... Second, SI is explicitly about addressing need, whether it is in areas such as education, health or more broadly in dealing with social exclusion. ... Thirdly, though this is not necessary, SI is often aimed at specific domains such as education, health or migration.

The second feature foregrounding a social need relates to the purpose of the action, while the first and third features extend the coalitions and domains for collective actions beyond the triple helix actors common in the traditional framing of regional innovation policy.

Another underpinning for an extended scope of agency can be found in recent literature on agency in regional development. With the notion of the Trinity of Change Agency, Grillitsch and Sotarauta (2020) suggest that regional transformation processes typically require the combination of different types of agency. Besides innovation, this comprises actions directed at changing existing or introducing new institutions, which Battilana et al. (2009) conceptualised as institutional entrepreneurship, and actions targeted at coordinating between variegated interests and mobilising and pooling resources for common goals, which is captured with the concept of place-based leadership (Sotarauta & Beer, 2021) and which resonates closely with the idea of orchestration in the governance of transitions (Gordon & Johnson, 2017). Grillitsch and Sotarauta (2020, p. 718) argue that regional outcomes vary despite similar preconditions '(a) because of differences in the development and exploitation of opportunity spaces and (b) that the trinity of change agency explains why some regions are more successful than others in their efforts to construct, develop and exploit opportunity spaces'.

The burgeoning literature on change agency in regional development provides evidence that contestations associated with transformation processes can be resolved in several ways, of which the following two pathways are the most frequently documented: first, institutional entrepreneurs and place-based leaders may address contestations by changing mindsets, visions, narratives and the regional preconditions over time. This transforms opportunity spaces, and as consequence the direction of entrepreneurial discovery processes (e.g., Rekers & Stihl, 2021; Sotarauta et al., 2021; Strambach & Pflietsch, 2018). Second, innovative entrepreneurs (technological or social) may demonstrate that something is possible, which goes against the dominant beliefs in a particular regional context. In this case, the process starts with an entrepreneurial discovery, which sparks a process where local actors rethink what is possible and pool resources to shape the opportunity spaces for further development (e.g., Kamath et al., 2023; Morisson & Mayer, 2021; Stihl, 2022).

Another important theoretical building bloc is the temporality underlying a broadened scope of agency.



The importance of expectations, projects, and imaginaries of the future for mobilising collective action for change is widely documented (Emirbayer & Mische, 1998; Garud et al., 2010; Steen, 2016). For achieving transformative change, actors need to engage in explorative actions for which the benefits are located in the more distant future (March, 1991). In the short run, regional preconditions and capabilities are relatively stable and rigid while in the long-term regional conditions and capabilities can be shaped to a large extent (Grillitsch et al., 2022). By foregrounding a long-term perspective that motivates action to realise a desired future, PCA is different from the current Smart Specialisation rationale, which follows a rather technocratic approach according to which regions should develop capabilities that are related to the current ones, implying step-wise small changes from the current regional conditions (Balland et al., 2019; Foray et al., 2021). In contrast, PCA does not embark from the existing skill base to define collective action but from a common purpose. PCA calls for the identification and development of the capacities required to realise the desired future, acknowledging the potential for more radical change based on acquiring and combining unrelated knowledge (Grillitsch et al., 2017). This can be achieved through engaging coalitions of actors, orchestrating efforts and building capacities over time (Gibney et al., 2009; Gordon & Johnson, 2017; Sotarauta & Beer, 2021). In the context of regional development, this speaks to the critique that Smart Specialisation has not delivered effectively in lagging regions nor in addressing the wicked nature of sustainability challenges (Hassink & Gong, 2019; Marques & Morgan, 2018; Rodríguez-Pose et al., 2014; Veldhuizen, 2020).

### 3.2.3. Resolution of the directionality subsidiarity tension

PCA recalibrates directionality and subsidiarity in regional development. As we noted above, calibrating the twin principles of directionality and subsidiarity is perhaps the holy grail of regional development policy. The next generation of regional policies need to champion both these principles – on the directionality front by offering a route map of the direction of travel, as the European Commission is currently doing with the European Green Deal and Cohesion Policy priorities for example, but which need to be matched with national-level priorities; and, on the subsidiarity front, by offering a user-friendly menu of options from which subnational actors select the priorities that are attuned to and resonate with their unique circumstances (Kivimaa & Morgan, 2022).

However, in the case of the current policy rationale manifested in the entrepreneurial discovery process, directionality is coming largely from top-down. Following the underlying theory of regional change, the European Green Deal, Cohesion Policies and/or new technology open opportunities that can be discovered, even though the expectations on digital solutions to deliver on greening the economy may be heroic (Coroamă & Mattern, 2019). Subsidiarity is reduced to identifying how local capabilities

can be brought to the most valuable use given the changes in the time-specific opportunity space. In contrast, PCA combines the principles of directionality and subsidiarity in a different manner. It gives local actors a role in defining their own purpose, rather than only orienting the direction of development towards priorities articulated top-down. It also gives local and regional actors a role in shaping opportunity spaces whereas in the dominant regional development policy rationale, opportunities are considered to exist independently and outside the sphere of influence of local actors. PCA also shifts attention from opportunities that can be realised in the short-term with existing (or related) capabilities following a fit-and-conform rationale to the long-term development of capabilities and opportunity spaces to serve a purpose following a stretch-and-transform rationale. Hence, top-down directionality is combined with bottom-up PCA so that productive problem–solution nexuses can be found to address local challenges and contribute to wider societal goals.

PCA offers an operational way where the call for a mission-oriented approach (Mazzucato, 2018) meets the call for more hands-off entrepreneurial experimentation propagated by others (Wennberg & Sandström, 2022). The focus on transforming opportunity spaces through PCA is in line with Mazzucato's (2018, p. 813) demand that the state shall engage in 'market making and shaping rather than just fixing'. Mazzucato (2018) proposes breaking missions down in mission projects and ensuring continuous learning and reflexivity between mission projects, as well as vertically and horizontally at different levels of government. Considering both the contested nature and complexity associated with addressing sustainability challenges, such an approach tends to imply massive coordination and reflexivity challenges and may curb entrepreneurial experimentation. However, hands-off entrepreneurial experimentation as suggested by Wennberg and Sandström (2022) seriously neglects the directionality that is needed to address sustainability challenges.

Resonating with mission-oriented approaches, PCA emphasises the articulation of a long-term purpose by local or regional actors, often picking up on directionality provided for instance by SDGs or the European Green Deal. Instead of focussing on structuring the transformation in mission projects or relying on free-market experimentation, PCA emphasises the collective engagement of local actors to work towards the purpose, which essentially entails the development of opportunity spaces bottom-up by for instance building required capabilities, changing routines or mindsets. PCA gives room to technological and social innovation in reshaped opportunity space, with a lower demand on coordination as compared to mission-oriented approaches. Different tools are also available at the local and regional level to shape opportunity spaces such as functional procurement and the use of conditionalities (Giuliani, 2024; Molica, 2024; Morgan, 2025). This makes it possible to combine mission-oriented with place-based approaches, with a strong focus on community engagement (Butzin et al., 2024; Cappellano et al., 2023).

Yet, rather than foregrounding experimentation in a narrow economic sense, PCA shares the foci of experimental forms of governance which call for the framing of problems, the brokering of problem-solving partnerships, as well as the scaling to affect existing regimes (Morgan & Sabel, 2019). PCA is also a non-prescriptive approach where purpose steers collective action, adapting to the ever-changing situations actors find themselves in, which is a basic premise in agency–structure dynamics. PCA is thus attuned to both generative and evaluative functions required for societal transformations, and thereby enhances reflexivity (Coffay et al., 2022).

#### 4. CONCLUSIONS

In this paper we consider how regional development policy can be designed to foster sustainability (the well-being of people and planet) as well as being a catalyst for innovation. Specifically, we consider how new variations and extensions of Smart Specialisation, the current innovation-based regional development policy approach in the EU, have opened-up debates about new directionalities in pursuit of SDGs, missions, and sustainable development more generally. Seeking to go beyond just a change of terminology, the paper discusses why the shift towards challenge-oriented regional policies has important implications for combining the principles of directionality and subsidiarity, with growing tensions between top-down priority setting and bottom-up regional development processes.

To ensure that such debates do not run ahead of necessary theorisation, we argue for a critical reflection and reassessment of one of the guiding concepts in current regional development policy, namely the entrepreneurial discovery process. We find that the continuous focus on entrepreneurial discovery processes makes it difficult to calibrate directionality with subsidiarity for a challenge-oriented regional policy approach. This is because in its initial conception, entrepreneurial opportunity is largely treated as given and independent of the decisions local or regional actors take. Sustainable directionalities are then articulated through European or national priority setting such as the European Green Deal, and subsidiarity remains in finding workable pathways in opportunity spaces reconfigured top-down. However, regional transformations are often contested and not well aligned with existing capacities, which hinders the realisation of the desired sustainability outcomes.

We have thus proposed the notion of PCA to capture an alternative theory of change for a new generation of regional policy, which resonates with and builds on insights from a variety of approaches and streams of literature, including the open discovery process articulated in the PRI (Pontikakis et al., 2022), path creation and change agency in regional development (Garud et al., 2010; Grilitsch & Sotarauta, 2020), as well as transition governance and leadership (Gordon & Johnson, 2017; Sotarauta & Beer, 2021). PCA foregrounds the role of local actors, mostly in interaction with non-local actors, in effectuating

regional development paths that comply with sustainability imperatives. This is done by giving directionality to entrepreneurial discovery processes through transforming opportunity spaces by strategic and collective agency. PCA also acknowledges the importance of the interplay between different types of agency, such as place-based leadership, institutional entrepreneurship, and technological and social innovation in affecting sustainable regional development.

We argue that resolving the contestations around sustainability challenges and building the required capacities for regional transformations require policymakers to enlarge their realm from pursuing entrepreneurial discoveries to engaging more broadly in processes of PCA and integrating lessons learned from experimentation processes in and across a variety of domains. This includes changing policy rationales and mindsets, legitimising new directionalities, framing challenges, mobilising across actor groups, pooling resources to build capacities and thereby transforming place-based opportunity spaces. Through the transformation of opportunity spaces, the direction of regional development is influenced through bottom-up processes. Subsidiarity is strengthened by giving local actors a role in articulating directionality rather than seeing their role mainly in finding and implementing suitable pathways in line with priorities articulated top-down. By adopting a more capacious perspective to change processes and policy agency, directionality and subsidiarity are recalibrated in a new generation of challenge-oriented regional development policies to develop problem-solution nexuses that contribute to regional and overarching sustainability goals.

For this to happen, it is necessary to develop the institutional capacity for a regional development policy that is sensitive to multiple (and sometimes conflicting) societal goals. Such a policy needs to be able to mobilise across actor groups and engage in PCA as well as continuously monitor unfolding intentional and unintentional effects of such engagement, extending the view of innovation from the technological to the social realm. Experimental policy framings such as S3+ and PRI indicate that regional policymaking (at least in Europe) is venturing in this direction, but greater political care and analytical attention should be devoted to gauge whether such policy renewal is subject to processes of path dependency and layering, adding new policy instruments while leaving existing underlying framings largely unchanged (Thelen, 1999). While a lot of effort is being channelled into the development of new regional policies, the extent to which these stretch-and-transform existing policies, rather than fit-and-conform through incremental policy adjustments keeping existing policies largely intact (cf. Smith & Raven, 2012), needs to be scrutinised beyond initial stages in the policy cycle. That is, the ability to combine directionality and subsidiarity is contingent on policy implementation and policy monitoring and evaluation (Uyarra et al., 2025).

We see several practical implications for policymakers at different levels. For the negotiation and articulation of

policy frameworks for regional development at the European and national level, a key take-away would be to recognise and leverage the potential local actors have to transform opportunity spaces and shape regional development paths in line with sustainability imperatives in the long-run. A task would then be to find incentives to trigger, nudge or empower PCA at the local and regional level for sustainability transformations. At the local and regional levels, PCA provides a theory of change that allows in the long-run to break with path dependencies and reach more desirable and sustainable regional development paths. It would urge local and regional policymakers to move beyond the narrow boundaries of entrepreneurial discovery and start engaging in a discourse to resolve trade-offs, conflicts and contestations often inherent in sustainability challenges and formulating long-term regional development objectives (Fratesi, 2025). With such a perspective, local and regional actors could then work towards establishing conditions that make sustainable regional transformations possible.

Further research is required to assess whether the experiments for next generation regional development policy move beyond the experimental stage and succeed in putting people and planet at the heart of regional development. Studies about PCA in local and regional contexts are required that critically examine the intended and unintended outcomes of such efforts. Our proposition is that PCA provides a theory of long-term societal transformation, which makes it possible to effectively resolve the directionality–subsidiarity paradox in place-based regional development. Yet, research is required to identify enabling and hindering, possibly necessary and sufficient conditions for PCA to achieve the desired outcomes, and under which circumstances PCA is not sufficient. This calls to study regional transformations in concrete and comparative settings over a longer period, as transformations in local and regional development take time and are context dependent. Research would also be required to understand why PCA emerges in certain circumstances and times but not in others, and how this theory of regional transformation could be integrated in regional policies that effectively address societal challenges.

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## NOTES

1. In the context of increased geopolitical competition, a new set of top-down articulated directionalities has emerged (Kivimaa, 2022), which widens the tensions between directionality and subsidiarity discussed in this paper, and thus the relevance of the theoretical arguments.
2. For example, see the *Cambridge Dictionary*: ‘the process of finding information, a place, or an object, especially for the first time, or the thing that is found’; the *Cambridge American Dictionary*: ‘the act of finding something that had not been known before’ or the *Oxford Learners’ Dictionary*: ‘an act or the process of finding somebody/something, or learning about something that was not known about before.’
3. In a similar vein, the logic of scientific discovery propagated by Bhaskar (1975/1997), in his seminal contribution to a realist theory of science, suggests that things and their causal powers exist in ‘real’ independence from our knowledge. Scientific discovery is a process of learning about these things and their causal powers (Sayer, 2000).

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