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Directionality and Subsidiarity: A Regional Policy for People and Planet

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Abstract:

In this paper we consider if and how regional policy can be designed to foster sustainability (the wellbeing of people and planet) as well as being a catalyst for innovation and development. Focusing on the entrepreneurial discovery process, the paper explores its role and limitations in balancing directionality and subsidiarity in regional development. In its original conception, it was designed to direct regional development towards promising future opportunities building on existing strengths. We argue that while the rationale of the entrepreneurial discovery process serves innovation-driven competitiveness, it lacks sufficient sensitivity to the social and environmental dimensions of sustainability. Rather than retrofitting the missing dimensions of sustainability, the logic needs to be rethought from the basics, which we do by asking if and under which conditions the entrepreneurial discovery process directs regional development to deliver on human wellbeing and environmental impact. We argue that this depends on the nature of existing opportunities, on how development is framed and on who is engaged in the discovery process. To this end we argue that regional policy needs to i) adopt a more capacious perspective to change processes and policy agency, taking action if needed to reconfigure the opportunity space, and ii) adopt a broader perspective on discovery processes, which goes beyond the realm of entrepreneurs and business alone and integrates the lessons learned from experimentation processes in and across a variety of domains. For this to happen, it is necessary to develop the institutional capacity for a regional development strategy that is sensitive to multiple (and sometimes conflicting) societal goals.

Keywords: regional innovation policy, smart specialisation, partnerships for regional innovation, sustainability transitions, discovery process, opportunity space

JEL Codes: O10, O20, O38, R10, R58

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1 Introduction

There is a growing demand for a new generation of regional policies which delivers not only on competitiveness and economic growth but also on environmental and social outcomes. This demand is apparent in the different policy experiments of the European Commission, notably Smart Specialisation for Sustainable Development Goals and the pilot programme Partnerships for Regional Innovation (Pontikakis et al., 2022, Miedzinski et al., 2021). More generally there is growing appreciation in academic and policy worlds that innovation policy needs a new direction addressing societal challenges and promoting system transformation. Typical examples of such new approaches are mission-oriented innovation policies or transformative innovation policies (Mazzucato, 2018, Schot and Steinmueller, 2018).

While the deep double-crisis in regional development relating both to climate change and socio-economic inequalities demands urgency (Donald and Gray, 2019), it may also be problematic if policy is “running ahead of theory” as happened to be the case with the smart specialisation (S3) policy approach (Foray et al., 2011). S3 is the largest and most encompassing innovation-based regional development approach ever in the European Union (Radosevic, 2017, Asheim et al., 2017). S3 introduced the entrepreneurial discovery process as a new way of stakeholder engagement for identifying regional priorities (Foray, 2017). The entrepreneurial discovery process is meant to promote regional transformation by diversification into new domains of economic activity, but has been criticised for falling short on this promise (Hassink and Gong, 2019). Furthermore, S3 was found to be particularly challenging in lagging regions with weak quality of governance, thus reinforcing rather than reducing regional disparities (Marques and Morgan, 2018, Rodríguez-Pose et al., 2014).

Despite open questions related to the design, implementation, and outcomes of S3 (Hassink and Gong, 2019, Benner, 2020), it has been widely considered a step forward in place-based development policies, in particular by the way stakeholders are involved (Pontikakis et al., 2022). Not surprisingly, therefore, the new regional policy experiments like S3+ and PRI build on the experiences gained with S3, and they aim to broaden the regional policy approach by incorporating not only economic but also social and environmental objectives. As the policy experimentation processes with PRI are at an early stage, we cannot yet study outcomes empirically. Yet, we consider that it is both possible and important to reflect theoretically on the necessary conditions under which regional policies can be designed and implemented so that societal challenges can be addressed effectively and explicitly, which is the goal of these policy experiments.

The paper is structured as follows. In section 2 we present a brief comparison between the latest regional policy experiments - S3+ and PRI. Then, in section 3, we unveil three challenges of regional policies that go beyond the economic realm and target environmental and social outcomes: opportunity challenges, capacity challenges, and democratic challenges. We argue that these challenges are mainly due to a misconception in discovery processes that opportunities are exogenous, outside the scope of agency in regional policy making. Due to this implicit misconception, we show that neither S3+ nor PRI currently address these challenges satisfactorily, which leads us to argue in section 4 that we need a more capacious regional development perspective, going beyond the notion of entrepreneurial discovery, if the new policy approaches are to achieve their objectives, i.e. address societal challenges.

2 New EU policy experiments: Smart Specialisation for Sustainable Development Goals (S3+) and Partnerships for Regional Innovation (PRI)

New policy experiments have been developing in the context of a widespread commitment to regional policies, which are sensitive and adapted to varying local contexts, also called place-based policies. Place-based policies took centre stage in the European Union (EU) with the Barca (2009) report, defining a place-based policy as “a long-term strategy aimed at tackling persistent underutilisation of potential and reducing persistent social exclusion in specific places through external interventions and multilevel governance” (Barca, 2009: 7). The report highlighted that such policies rely on local knowledge, have a territorial focus considering context-specific opportunities and challenges while at the same time taking relations to other places into account. It is noteworthy that the *social* dimensions received a high priority even then. It was also around 2009 that Smart Specialisation (S3) was conceived as a particular kind of place-based innovation policy (Foray, 2014). Related to the idea that place-based policies need to rely on local knowledge, the most novel idea was the introduction of the entrepreneurial discovery process (EDP) as a stakeholder engagement process to identify new domains of economic activity, and consequently inform policy makers which areas of economic activity to prioritise (Foray et al., 2009, Hausmann and Rodrik, 2003).

From its inception to its implementation during a full programming period of the EU from 2014 to 2021, scholars have scrutinized S3, practitioners have learned, and the S3 approach has mutated in the process – as the critical conversation between Hassink and Gong (2019) and Foray (2019) illustrates. The most important change for the new EU programming period starting in 2022, however, is the widespread appreciation that, as well as promoting economic development, regional policy needs to address societal challenges such as climate change and inequalities, which are threatening human civilisation and constitute a deep, interconnected double crisis (Donald and Gray, 2019, McCann and Soete, 2020). For this reason, the European Commission has started to experiment with new regional innovation policy approaches, such as Smart Specialisation for Sustainable Development Goals (S3+) and the Partnership for Regional Innovation (PRI) (Pontikakis et al., 2022, Miedzinski et al., 2021). Both policy experiments build on the positive experience with S3, and in particular the EDP “to engage with stakeholders for strategic tasks, such as vision development, priority setting, project development, implementation and monitoring and evaluation” (Pontikakis et al., 2022, 39). We have thus organised our short overview of S3+ and PRI as comparisons to the original S3 design. This overview focusses on key contrasts between the different approaches.

2.1 Smart Specialisation for Sustainable Development Goals (S3+)

Smart Specialisation strategies addressing the SDGs (S3+) aim to mobilise research and innovation to respond to localised sustainability challenges. Where the initial development of S3 was mainly geared to fostering industrial transformation and enhancing regional competitiveness, the new directionality towards sustainability raises the ambition for innovation to respond to societal challenges and foster systemic changes in key societal systems, such as energy, food, mobility or housing.

To become purposeful for sustainability challenges, S3+ revisits and extends the original S3 framework and methodology to facilitate reflexive, responsible innovation and systemic change in line with the transformative ambition of the 2030 Agenda. To recognise these challenges, JRC proposed a theoretical framework (Miedzinski et al., 2022, Miedzinski et al., 2021) based on three overarching characteristics:

- *Shared direction towards the SDGs.* If SDGs could become a reference for localising the global challenges and identifying and selecting key priorities at different territorial levels; the role of the S3+ process is to localise the SDGs and mobilise science, technology and innovation, broadly understood, to address these challenges in specific territorial contexts.
- *Whole-system transformation towards sustainability.* In order to drive structural and systemic change the S3+ process helps to identify specific areas and niches where quadruple helix stakeholders (including citizens and civic society) can meaningfully act and achieve change while contributing to wider systemic transformations. Notably, it is argued that the EDP should emphasize inclusive experimentation processes that encompass both top-down directionality and bottom-up deliberation to ensure shared ownership of sustainability goals (Bours et al., 2022). Here, experimentation refers to "iterative action that generates small wins, promotes evolutionary learning and increased engagement, while allowing unsuccessful efforts to be abandoned" (Fastenrath and Coenen, 2021, 141). Such iterative action encompasses a broad notion of innovation, including entrepreneurial, technological grassroots, social and public sector innovation.
- *Responsibility and reflexivity.* In extending the S3 process, S3+ highlights moral and ethical considerations and discussions, trade-offs and limitations in innovation that seeks to balance creating and capturing value for the region while contributing to tackling global environmental and social challenges. As such it draws on the idea of responsible research and innovation (Stilgoe et al., 2013) as key to navigate difficult sustainability choices and priorities. This is considered critical for harnessing the potential of Smart Specialisation to work towards 'just transitions' that leave no one behind and create shared value for future generations.

Because of the overall strategic direction given by EU policy (e.g. the European Green Deal) but also because of a growing understanding of the necessity and urgency to act to address sustainability challenges at regional and local levels, many regions are trialling and testing their S3 strategies to enhance sustainability transitions. To what extent this is a more or less coordinated process based on principles of democratic experimentalism (Sabel and Zeitlin, 2012) leading to generative experimentation or a more 'wild', unruly process where variation and freedom (to fail) are cornerstones of Darwinian experimentation (Ansell and Bartenberger, 2016) remains to be seen.

2.2 Partnerships for Regional Innovation (PRI)

PRI was designed to build on and develop the S3 programme to enable place-based innovation policy to address a broader set of goals than the original S3 policy agenda, which was largely framed in cohesion policy terms to help regions to harness their science and technology resources to create more innovative forms of regional economic development (Foray et al, 2013). The origins of the PRI are to be found in a radically new policy direction in the European Commission's Joint Research Centre in Seville, where an inter-disciplinary team was formed in the Innovation and Growth division led by Mikel Landabaso, one of the original architects of EU regional innovation policy in the 1990s (Morgan and Nauwelaers, 2000).

Whereas S3 was essentially a Cohesion Policy tool, indelibly associated with a single directorate (DG Regio), the PRI initiative is not confined to any one DG, even though it has been designed by the JRC. For this reason, it can be utilised as a place-based delivery vehicle for every DG because the vast majority of EU policies need to have a spatial sensibility if they are to be implemented in an effective and impactful manner.

As well as being a place-based delivery vehicle, the PRI initiative was also designed to address two types of fragmentation in the European innovation ecosystem:

- (a) *Fragmentation of funding instruments and policies in the territories* (horizontal fragmentation): the achievement of the twin transition of greening and digitalizing the economy requires the mobilization of multiple funds (RRP, HE, ESIF, as well as national and regional funds) beyond Cohesion policy, leverage investments beyond research and innovation funding and leveraging other policies (education, industrial, employment, energy, transport, etc.) that can amplify the impact of innovation expenditure;
- (b) *Disconnection of regional/national initiatives from those of the EU* (vertical fragmentation): while a plethora of instruments exists to support coordination between innovation players and ecosystems, coordination at higher level of granularity is insufficient. Regional initiatives do not benefit sufficiently from synergies with initiatives in other regions, Member States and the EU (Pontikakis et al., 2022).

Sustainable development is described as the PRI's 'guiding star' and it aims to achieve this goal by reference to the roadmap of the 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, 34).

How to calibrate directionality and subsidiarity is perhaps the holy grail of place-based innovation policy, a challenge that Barca sought to address by drawing on the principles of "democratic experimentalism" developed by Sabel et al (Barca, 2009, 41). We return to this issue in section 4.

The PRI is structured around three operational and inter-related building blocks. The first building block is a *Strategic Policy Framework* that adopts a Whole-of-Government approach that encourages broader and dynamic horizontal planning. The second building block, an *Open Discovery Process*, enables engagement, deliberation and path co-creation with multiple stakeholders, repurposing the established participatory governance approach of S3 towards sustainability objectives. The third building block, a *Policies and Action Mix*, mobilizes additional instruments to publicly-funded projects, sequences interventions against other actions so that they result in synergies by design and, importantly, co-opts additional actions by stakeholders.

Although all these building blocks are equally important, our primary interest here is in the Open Discovery Process (ODP). The ODP is deemed to be the central PRI mechanism for stakeholder engagement and co-creation (Pontikakis et al., 2022). Among other things, the ODP seeks 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 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" (Pontikakis et al., 2022, 41).

Table 1 Comparison of Smart Specialisation (S3), Smart Specialisation for Sustainable Development Goals (S3+), and Partnerships for Regional Innovation (PRI)

Criteria	S3	S3+	PRI
Desired outcome	Competitiveness and Growth	Sustainable Development Goals	Long-term societal wellbeing
Policy Framework	Structural Funds	Structural Funds	Multiple programmes
Principal Agent/ Orchestrator	Regional Development Officers	Regional Development Officers	Whole of Government
Engagement & priority setting	Entrepreneurial Discovery Process	Entrepreneurial Discovery Process & Experimentation	Open Discovery Process
Stakeholders	Triple Helix	Quadruple Helix	Quadruple Helix
Implementation	Guidebook	Adjusted Guidebook	Playbook
Policy Mix	Mainly innovation/economic policies	Adding additional policy domains to innovation/economic policies	Mobilising of multiple relevant policy domains

Source: own

3 The discovery process and three buried challenges

Discovery processes play a key role in exploring the conditions under which place-based development policies can contribute to addressing societal challenges. This is because they are at the heart of gathering local knowledge, and tailoring interventions to the opportunities and challenges of particular places. We will argue here that the common understanding of discovery processes results in three key challenges that impede the effectiveness of place-based policies to address societal challenges. We argue that these challenges – to a different degree – are buried in implicitly held assumptions about the nature of discovery processes. The discussion that follows is mainly of conceptual and theoretical nature, which we, however, aim to contextualise in relation to the PRI.

In common language, *discovery* can be defined as “the act of finding something that had not been known before”¹. 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. This view resonates for instance with the logic of scientific discovery propagated by Bhaskar (1997) in his seminal contribution to a realist theory of science. Accordingly, 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 (see also Sayer, 2000).

The idea of discovery plays an important role in entrepreneurship theory. According to Shane and Venkataraman (2000, 217) “entrepreneurship is concerned with the discovery and exploitation of profitable opportunities.” As regards opportunities, the object of entrepreneurial discovery processes,

¹ See e.g. 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.”

Shane and Venkataraman (2000, 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 give “proof” to whether an entrepreneurial opportunity exists for real.

In relation to the nature of opportunities, Berglund et al. (2020) argue that “[t]he 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”. The authors suggest that the dominant view is an inheritance from economic theory where entrepreneurial discovery has to do with “gradually but systematically pushing back the boundaries of sheer ignorance” (Kirzner, 1997, 62). This dominant view, according to Berglund et al. (2020), provides limited insights in how entrepreneurs manage uncertainty. In contrast, the authors propose a view of entrepreneurship as a process where opportunities are iteratively developed as entrepreneurs engage with their environment. In this view, environments are not discovered but created, and thus can be influenced by human agency (Engel et al., 2017). We will come back to the nature of opportunity in section 4, where we develop a more capacious approach to regional policies.

Here, the distinction between discovered and created opportunities is useful to pinpoint that the underlying view of opportunities in the entrepreneurial and open discovery processes in S3 as well as PRI is in line with the dominant view. As regards the EDP, Foray (2014, 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 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” (ibid, 495). This knowledge has a societal value as it will trigger innovation and early growth of the activity. However, in order 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.” (ibid. 499). Hence, the logic is that first comes the discovery of a new domain of opportunities, which in a consecutive step shall be supported by policy.

To be sure, the notion of EDP has changed over time and in a recent contribution Foray (2019) concedes that the EDP has a more limited role in the phase of initially setting priorities but that it comes very much into play when translating these priorities into the projects and actions in what he calls transformational roadmaps: “The entrepreneurial discovery process does not take place at the step of priority area choice (as was previously thought) – and here a participative process (always important as from the first phase) must not be confused with an entrepreneurial discovery process that will only take place afterwards in the way in which the transformative activity is constructed and developed – in response to the priorities considered.” (ibid, 2074) Even though not fully clear, the role of the EDP appears then to discover the path that works, i.e. the collection of projects, activities and people that will bring about the desired change.

Despite the changed perspective on EDP, we contend that the basic assumption about the relationship between discovery and opportunity as something objective and independent remains. This is corroborated by the formulation of the ODP in the Playbook for PRI (Pontikakis et al., 2022).

Accordingly, the ODP is “the central PRI mechanism for stakeholder engagement and co-creation. It is where new opportunities are co-discovered, where the agreement for their exploration begins and where joint plans for action are developed. The ODP builds on the positive experience of the Entrepreneurial Discovery Process (EDP) developed in the context of S3 to engage with stakeholders for strategic tasks, such as vision development, priority setting, project development, implementation and monitoring and evaluation.” (Pontikakis et al., 2022, 39).

The framing of ODP suggests a broader view of discovery processes as compared to EDP. This view is conceptually closer to an ongoing learning and stakeholder process than the economic perspective on entrepreneurial discovery envisioned in the early work on smart specialisation. Yet, the main thrust in the formulation is still that the object of discovery, i.e. an opportunity, is implicitly assumed to exist independently of the people engaging in the discovery process. This is supported by for instance the use of the notion of “window of opportunity” (p 28, 52) or the linear depiction of the relationship between the ODP informing the policy and action mix (p 31). To be sure, the playbook also suggests that the experiences of implementing the policy and action mix may feedback into the ODP, showcasing what works and what does not work, but we could not find an indication in the PRI playbook that policy and the action mix may also be viewed as shapers of opportunities, potentially even preceding the ODP.

3.1 The opportunity challenges

Considering opportunity as something external to local actors, something that can only be discovered but not influenced with the engagement of local actors, creates what we call the “opportunity challenges”. The root of the problem is twofold: First, if the perceived opportunity does not lie in areas that contribute to solving societal challenges, actors will not engage in this direction, and second, if the real opportunity does not lie in areas that contribute to solving societal challenges, actors’ engagement will not succeed. The distinction between perceived and real illustrates how any entrepreneurial action, or any action targeting change, rests on the imagination of a not yet realised potential (Schumpeter, 1911, Garud et al., 2010, Emirbayer and Mische, 1998), but that the outcomes of such actions are contingent upon the interplay of countless structural forces such as institutions and production networks erected at multiple scales, as well as the decisions made by other actors in a given temporal and spatial context (Bhaskar, 1997, Sayer, 1984).

For instance, Grillitsch et al. (2022a) discuss the evolution of the maritime industry in the western parts of Norway. In the early 2000s, the shipbuilding industry was in decline due to the competition from low-cost countries, threatening its survival. Yet, some entrepreneurial firms perceived an opportunity in the offshore service vessels markets for the oil and gas industry, took a risk and invested to be early movers. Other actors followed the move, which then led to a remarkable growth rate from 2004 to 2014 (the opportunity was real). However, in 2014, with the fall of the oil price, this market collapsed. At the same time, greening the economy has become a topic and firms perceived opportunities in moving into new “green” niches, like servicing offshore windfarms or building hybrid and battery-driven ferries. Yet, the yards have accumulated high losses, leading to major restructuring of the industry including change of ownership. Hence, the real opportunity in new green niches has probably been less favourable than initially perceived.

This example illustrates that a perceived opportunity is an explanation for the entrepreneurial ventures actors engage in, and that a success for such engagement necessitates that the opportunity is real. It is also a prime example for the “S3 dynamics” because regional policy responded to the entrepreneurial discovery by supporting growth through strong investments in the knowledge infrastructure for the maritime industry. However, the example further illustrates that the entrepreneurs largely follow the perceived opportunity. The support structures, when working on the

S3 strategy, indicated the need to diversify before the collapse of the oil and gas market, yet firms with some exceptions took strong action in this direction only after the collapse.

Hence, the discovery processes will not lead to effective and powerful interventions to address societal challenges if the perceived or the real opportunity is not in line with such desired policy outcome. The problem here is that the notion of discovery, as discussed above, considers opportunity largely as exogenous, external, and beyond the influence of local actors, and which in consequence largely disempowers local or regional policy makers from providing the necessary directionality. While some elements of opportunity like global market trends may indeed in most cases be outside the influence of local actors, we will elaborate on a contrasting perspective on regional development in Section 4 arguing that developing, reshaping and transforming opportunity spaces is possible and necessary for a regional development approach that aims to address societal challenges (cf. Binz et al., 2016, Flanagan et al., 2022)

3.2 The capability challenges

The perspective of discovery as nexus between actors identifying and taking action to exploit an opportunity, and the opportunity as given in the environment necessarily also entails the “capability challenges”. The capability challenges imply that even if an opportunity exists, which would contribute to addressing societal challenges, it requires actors to perceive such an opportunity and make use of it. However, the ability of actors to perceive and make use of opportunities depends on actor- and region-specific properties developed in the past. At the actor level, this relates to the problem of absorptive capacity, which in its classic definition is about the ability to recognise the value of external information, assimilate it and apply it to an organisation’s strategic goals (Cohen and Levinthal, 1990). Actor-specific properties like acquired skills, competences, networks or resources create variations in the information actors have access to and in the capabilities actors have to combine the available information into new ideas (Shane and Venkataraman, 2000). Region-specific properties refer among others to regional preconditions such as industrial mixes, knowledge bases, built infrastructure, as well as the embedding in multi-scalar networks and institutional architectures. A large body of work foregrounds the importance of such preconditions for the future development of regions, where new economic activities are typically related to past economic activities (Hidalgo et al., 2018). This dismisses a heroic perspective where regions select and fashion directionality of innovation strategies solely on the basis of societal problems neglecting the needed capabilities for addressing them.

For instance, as concerns the societal challenge of global warming and the need to transform the energy system, regions have very different preconditions to take advantage of such a transformation. While actors in some regions have the required information and capability to discover the opportunities, which such a transformation entails, actors in other regions have not. This is illustrated by combining the emergence of the Danish wind power industry with the efforts of industrial restructuring in mining regions. Simmie (2012), investigating the development of the Danish wind power industry, shows that the local actors in the periphery of Denmark developed experience and competence with alternative sources of energy, in particular wind power, from the 1950s onwards. This gradual development of capabilities is explained as combination of a local need because of shortcomings in the energy infrastructure, policy incentives, and entrepreneurial activities. With the growing attention to decarbonise the energy sector, and consequently the increased demand for wind power, Danish actors were in a good position to both identify and exploit this opportunity. In contrast, Görmar et al. (2022) investigate the transformation of four mining regions in Germany, Hungary, the Czech Republic, and Sweden. A common feature of the mining regions is that the industrial history shaped the local culture and knowledge base both affecting which information was available, or was paid attention to, and the capabilities to make use of this information and engage in discovery

processes. While mining in Kiruna, Sweden continues with ambitious innovation projects to decarbonise iron or extraction, other regions where lignite mines were closed, such as in Zeitz, Germany, suffer from a capability base, which has largely become redundant and irrelevant. Efforts for industrial restructuring start from a very low level and require in essence that the region reinvents itself.

To be sure, the literature on S3+, as well as the PRI Playbook point to the importance of capabilities. However, the focus in this literature is largely on the capabilities within the governance structure to implement the discovery process, which sets quite high demands on stakeholder participation (Sotarauta, 2018). As such, the literature points to the dilemma that lagging regions, which would most need effective place-based policy interventions, are the least capable to make them work, a dilemma referred to as the regional innovation paradox (Marques and Morgan, 2018, Oughton et al., 2002). We pursue an argument that goes beyond the capabilities to govern regional development processes. It relates to the local knowledge of the actors that partake in the process. Here, in the effort to promote evidence-based policies, S3 has drawn significantly on the relatedness idea, meaning that regions should develop capabilities related to the current ones (Balland et al., 2019). However, what would be the policy guidance for regions like Zeitz, which cannot draw on the advantages of knowledge complexity, and where local capabilities and capabilities related to the local ones are not adequate to pursue opportunities that may contribute to addressing societal challenges? The main problem here is a narrow, static and backward-oriented view on capabilities. In section 4, we will argue for a more capacious and long-term perspective of regional development, where a variety of capabilities (not necessarily advanced-scientific knowledge) may contribute to addressing societal challenges, and where institutional and social agency play an important role in regional change processes (Boschma et al., 2017), including the possibility of developing new, unrelated capabilities in the long-run (Grillitsch et al., 2018).

3.3 The democratic challenges

The third area of concern with the idea of discovery processes are the “democratic challenges”. Democratic challenges refer to the question who is heard in the discovery process, which in the S3+ and PRI framing shall inform policy action. Here, it is important to differentiate between stakeholders who have power or influence and those who are affected but lack power and influence. Dominant actors are usually included and they often (but not necessarily) have stakes in the old economy (Jolly et al., 2020). Niche, fringe, or vulnerable actor groups tend to be the most affected (or represent those most affected) by environmental and societal threats but have a weaker voice in decision making processes. This problem is aggravated in S3+ and PRI as compared to S3 because the triple helix actors engaged in enhancing innovation and competitiveness are relatively clearly defined and organised, while this tends to be less the case for the third and fourth sectors and vulnerable groups. This relates to problems associated with *solutionism*, which refers to a misleadingly narrow framing of problem diagnoses in response to readily available, often technological solutions propagated by some actors groups but sidelining alternative problem framings that might benefit different actors groups (Pfothenauer et al., 2022, Montero, 2020).

The dilemma and trade-offs between rapid transformations and inclusive development is discussed by Skjølsvold and Coenen (2021) using the case of energy and climate transitions. The authors argue that the push for an acceleration of transformations conflicts with the pace and ability to make decisions in participatory and democratic ways, that some even consider slow democratic decision making to be a break for transformations, and that accelerated social change and pace of life deteriorate the common ground such as shared values for decision making. The authors argue that policy makers need to consider carefully, which processes need to be accelerated and which ones might need slowing down,

and how governance should cater for this. The second dilemma concerns that rapid transformation may exacerbate spatial unevenness and inequality, where the already technologically advanced and resource-rich regions and countries may be better equipped to respond to societal challenges.

Policy makers are aware of the democratic challenges as the following quote illustrates: “The stakeholders include the private, research and public sectors. Ideally non-governmental organisations (NGOs) and civil society should also be involved, yet this segment of society was in practice rarely included.” (Pontikakis et al., 2022, p. 40). While S3+ and PRI articulate the aim to include a broader group of stakeholders in the process, this remains a practical and contextual challenge. For instance, vulnerable groups such as elderly, sick, children, refugees, immigrants etc. are in most need for interventions enhancing their wellbeing. Does this thus suggest a significant shift in the actor composition in stakeholder engagement processes towards such groups and (away from currently influential business, research, and public sector actors)? Alternatively, are powerful incumbents key for making rapid transformations possible? Which consequences would this have on engagement and decision processes, with the allocation of resources in mind?

Table 2 summarises the three policy challenges. S3+ and PRI largely ignore the opportunity challenges, which, we have argued, has to do with the implicit assumption that opportunities are independent from regional policy, i.e. that regional policy and the engagement of local actors have no influence on opportunities. We will show in the next section that this is a major shortcoming, which needs to be corrected if regional policy is to be effective in addressing societal challenges. The capability challenges and the democratic challenges are recognised in S3+ and PRI. As regards the capability challenges, the mitigation actions focus mainly on the governance capacity to design and implement place-based regional policy but largely ignore the capabilities of the local actors who are to be engaged in the process. As concerns the democratic challenges, policy makers will still have to specify which actors need to be engaged and in what ways to address most effectively social and environmental objectives.

Table 2 Policy problems and mitigation actions

Challenges	Mitigation action (S3+)	Mitigation action (PRI)	Key open issue
Opportunity Challenges	Not addressed	Not addressed	
Capability Challenges	Capacity Building	Capacity Building	What capacities (individual skills, organisational capabilities) need to be built for effective and powerful interventions addressing societal challenges?
Democratic Challenges	Proactive approach to engage civil society, experimental governance (multi-level)	Proactive approach to engage civil society; Challenge-oriented innovation partnerships (cross-sectoral, multi-level)	Which actors need to be included how for effective and powerful interventions addressing societal challenges?

4 Towards a more capacious regional policy for people and planet

The analysis of the three challenges directs attention to an excessively narrow and restricted view of agency in regional policy. Agency is mainly seen in identifying, evaluating, and exploiting new opportunities, and then in supporting the exploitation of the discovered opportunities, whereas opportunities are considered as "things, objects, domains, areas" to be discovered, largely outside the scope of agency. This neglects the fact that important conditions for framing opportunities - such as knowledge, institutions, or infrastructure - are socially produced, or assumes that their production cannot be influenced at the regional scale. This view also ignores that perceived and real opportunities are necessary conditions for creating the social engagement needed for transformation and for such engagement to be successful. Taking opportunities as given creates a risk for capture by 'fit-and-conform' niche innovation rather than 'stretch-and-transform' patterns of consumption and production (Smith and Raven, 2012, Haarstad et al., 2022). Smith et al. (2016) remind us that niche innovation was conceived as a convening space for experimentation that valued different cognitive frames and conceptual assumptions, and some of the more critical implications of niches for prevailing institutions. 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 regimes (ibid).

We argue that new regional policy approaches for people and planet need to break radically with such a passive approach and actively engage in shaping opportunities and thereby directing discovery processes. For studying change agency in regional development, Grillitsch and Sotarauta (2020, p. 713f) suggest the notion of a stratified opportunity space to capture the "time or set of circumstances that make a change possible". From a regional perspective, the authors 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"; the region-specific opportunity space, "which [d]efines what is possible considering regional preconditions"; and the agent-specific opportunity space, which "[c]aptures perceived opportunities and capabilities of individual agents to make a change". Such a stratified conceptualisation of the opportunity space acknowledges that some mechanisms operate at the extra-regional scale and are often outside the sphere of influence of local actors. This is illustrated, for example, by an investigation of Coenen et al. (2015) about the "Biorefinery of the Future" initiative in Ørnsköldsvik, Sweden funded by VINNOVA, the Swedish Innovation Agency. Technologically the region was world-leading in biorefining but important regulations and the legitimation of the technology was largely shaped outside the region and where corporate identities, negotiated in non-local headquarters, did not align with the value propositions of biorefining (Coenen et al., 2015).

Moreover, acknowledging the stratification of opportunity spaces draws attention to actor- and region-specific conditions for making change possible. For instance, the study of Saxenian and Sabel (2008) about the New Argonauts 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, including the institutionalisation of a venture capital industry. This is an illustration that agency in regional development needs a wider framing comprising, besides innovative entrepreneurship, actions directed at changing existing or introducing new institutions, for which Battilana et al. (2009) coined the notion of 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 leadership (Sotarauta and Beer, 2021). Grillitsch and Sotarauta (2020, 718) combine these distinct agentic forms in the trinity of change agency and argue that a) regional outcomes vary despite similar preconditions

“[...] 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”.

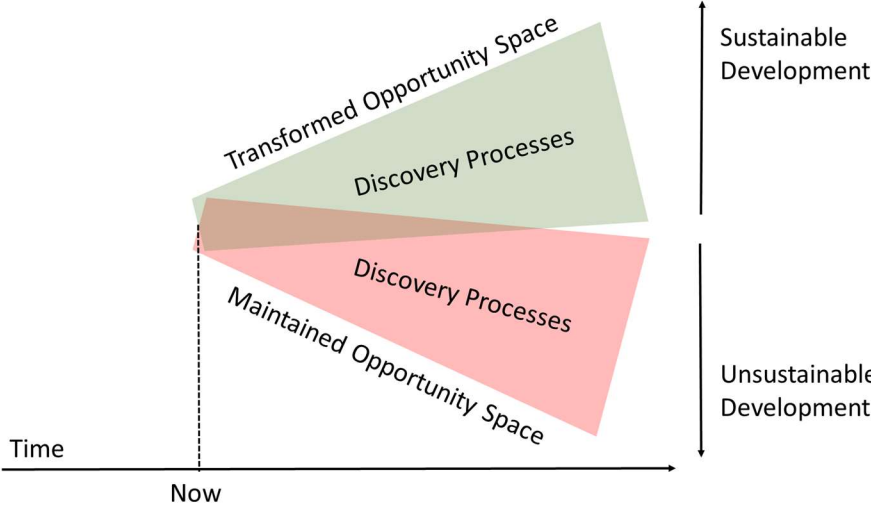
This theoretical argument has been empirically documented in multiple studies, the most comprehensive of which compares 40 phases of regional industrial path development in the Nordic countries (Grillitsch et al., 2022b). One key finding of this comparative study is that transformative change in times of crisis requires a combination of different types of change agency, which means that innovative entrepreneurship alone is not sufficient. The second key finding of particular importance for the arguments in the current paper is the identification of two process chains that lead to the mobilisation of different types of change agency. The first one fits well with a regional policy approach that focusses on discovery processes. It refers to cases, where innovative entrepreneurs identify and grasp new opportunities, and then work to legitimize and mobilise other regional actors to support the emerging new development path. Hence, regional policy follows the discovery of a new opportunity (see the example of the maritime industry in section 3.1). In contrast, the second process chain starts from the other end. It typically starts with a realisation of some actors that past practices and approaches are inadequate to address current challenges, and purposeful actions of these actors to change the prevailing mindset and mobilise resources to improve preconditions for alternative development trajectories. Over time, this alters the actor- and region-specific opportunity space and makes innovative entrepreneurship in new fields possible. Jolly et al. (2020), for instance, document such a process for the transition of the forest industry towards a circular bio-economy in Värmland, Sweden.

The call for a more active engagement in shaping opportunity spaces by regional policy may be countered by the argument that the conditions framing the opportunity space for traded sectors are largely global. For instance, the transport sector is dominated by a few original equipment manufacturers serving a global demand, the demand for clean technologies in the transport sector being heavily influenced by national and international regulations, and infrastructure. Yet, this argument overlooks the possibility for regional actors to shape critical niches (Smith et al., 2016) and spaces for experimentation (Marvin et al., 2018) with the potential to scale globally. In the case of the transport sector, Roebke et al. (2022) investigate how regional actors in Gothenburg, Sweden designed a space for experimentation with fossil-free public transport solutions, which then could be scaled to a global scale. The pretext to setting-up such a critical niche was a change in public policy and mindset about how to collaborate between the public and private sectors, and how to combine urban planning and regional development ambitions. Following the signature of a memorandum of understanding between the City of Gothenburg and Volvo Buses with broadly-defined goals, in a conception and development phase, the problem was framed and a new solution developed based on the idea of opportunity charging during the operation of the buses, for instance at bus stops. The solution was demonstrated and tested on one bus line, and eventually scaled. Scaling involved not only a large order of the regional transport company but also institutional entrepreneurship to standardise the technology for global sales as well as transplanting the collaborative and experimental governance mode to other local challenges. This example illustrates that even in a traded sector, regional policy has agency to shape the opportunity space, which in this case constituted the framing of a critical niche or urban experiment, the development of actors' capability over time, and finally even social engagement to shape the institutions framing the opportunity globally. It illustrates that even though certain mechanisms of the opportunity space operate globally, a concrete opportunity develops through actors' engagement at the intersection of different levels of opportunity spaces.

Another opening for regional policy is the increasing attention to *untraded* sectors, sectors that serve a demand and need of the local population, captured with the concept of the “foundational economy” (Bentham et al., 2013). The foundational economy pays attention to the material infrastructure, goods and services, which satisfy basic human needs, are crucial for people’s wellbeing, and at the same time take a lion share of the regional economy in terms of jobs. This includes the provision of utilities such as water, electricity, sewage, as well as public services such as health-, elderly-, and child-care and education. It provides a new orientation for regional policy (Heslop et al., 2019, Morgan, 2019), which is particularly suited to address social inequalities (Hansen, 2022). The increasing attention to the foundational economy leverages the role of regional policy to engage actively in shaping opportunity spaces. This is because municipalities and regional administrations in many countries have the competences and budgets to provide foundational goods and services, either directly, through companies owned by local administrations, or through public procurement and contracting to private actors.

Hence, the key argument is summarised in Figure 1. Discovery processes play an important role in our perception of regional development. However, it requires agency that transforms the opportunity space to provide the necessary directionality to shift development from an unsustainable to a sustainable pattern. This is in principle not a “new” role for government, as government has always been concerned with providing the framework conditions for human actions. What is new, however, is the experimental form of government, which needs to include the framing of the problem, the brokering of problem-solving partnerships, as well as the scaling to affect existing regimes (Morgan and Sabel, 2019).

Figure 1: Discovery processes and opportunity space



The proposed perspective for a regional policy approach addressing societal goals implies 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 and Sandström, 2022). This is because we suggest that regional policy should be actively shaping the opportunity space with societal wellbeing as the desired outcome. In that sense the approach is in line with Mazzucato’s (2018, p. 813) demand that the state shall engage in “market making and shaping rather than just fixing”. However, the mission-oriented approach tends to imply massive coordination and reflexivity challenges. For instance, 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. It is a formidable task to strike the balance between top-

down directionality and bottom-up subsidiarity, with outcomes feeding back to the top in a timely manner, informing adaptive policy making across sectors and levels. As we noted earlier, calibrating the twin principles of directionality and subsidiarity is perhaps the holy grail of place-based innovation policy. The PRI champions both these principles in its sustainability strategy – 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; and, on the subsidiarity front, by offering a user-friendly menu of priority options from which subnational actors select the priorities that are attuned to and resonate with their unique circumstances (Kivimaa and Morgan, 2022).

Our position contrasts with the hands-off entrepreneurial experimentation suggested by Wennberg and Sandström (2022) in their critique of the entrepreneurial state, which seriously neglects the directionality that is needed to address societal goals. We propose a view of regional development where bottom-up discovery processes unfold in a transformed opportunity space. To be sure, the outcomes of the discovery process need to be continuously monitored, informing how to further shape opportunity spaces. In that sense, the discovery process fulfils both its generative/entrepreneurial as well as its evaluative function (Coffay et al., 2022). Regional policy thus needs to pay particular attention to transforming opportunity spaces, which is seen as an emergent, multi-level, cross-sectoral agentic process where institutional change, leadership, and legitimacy building all play a role.

5 Conclusions

In this paper we consider if and how regional policy can be designed to foster sustainability (the wellbeing of people and planet) as well as being a catalyst for innovation and development. Specifically, we consider how new variations and extensions of S3 have opened up debates about new directionalities in pursuit of SDGs, missions and sustainable development more generally. To ensure that such debates do not run ahead of necessary theorization, we argue for a critical reflection and re-assessment of one of the guiding concepts in S3, namely the entrepreneurial discovery process. We find that in its initial conception, entrepreneurial opportunity was largely treated as given and exogenous to the agency of regional policy and actors. Foregrounding sustainable directionalities in regional policy requires, in contrast, that shaping opportunity spaces becomes internalized in the regional policy repertoire.

Seeking to go beyond just a change of terminology, the paper identifies three key challenges in a turn towards a Regional Policy for People and Planet: opportunity challenges, capability challenges and democratic challenges. These challenges call for subsidiarity to be given parity of esteem with directionality in next-generation regional policies. To this end we argue that regional policy needs to i) adopt a more capacious perspective to change processes and policy agency, taking action if needed to reconfigure the opportunity space, and ii) adopt a broader perspective on discovery processes, which goes beyond the realm of entrepreneurs and business alone and integrates the lessons learned from experimentation processes in and across a variety of domains. For this to happen, it is necessary to develop the institutional capacity for a regional policy that is sensitive to multiple (and sometimes conflicting) societal goals. Tentative empirical evidence indicates that regional policy-making (at least in Europe) is venturing in this direction but that greater political care and analytical attention should be devoted to gauge whether such policy renewal is subject to processes of path-dependency and layering. While a lot of effort is being channelled into the development of new regional policies, the extent to which these stretch-and-transform, rather than fit-and-conform, needs to be scrutinized 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. Further research is therefore required to assess, appraise and scrutinize whether the plethora of policy experimentation

for next generation regional policy gains momentum and is generative of more institutionalized forms, principles and repertoires of regional policy that puts people and planet at the heart of regional development.

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