Towards Resilient Organisations and Societies? Reflections on the Multifaceted Nature of Resilience

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INTRODUCTION

As the chapters in this volume have shown, resilience is a multifaceted and malleable concept that can be fruitfully applied to a wide range of phenomena at all levels of society. At the same time, there is a distinct danger of concept stretching (Collier et al., 1993). In this concluding

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chapter, we look at both the extensiveness of the concept, reviewing the range of complementary concepts that have been engaged by the authors, and at how it can be delimited to maintain conceptual distinctiveness and explanatory value.

In the introduction of this edited volume (Frigotto et al., 2022), five questions were identified that address translation issues arising from the resilience concept's importation into the social sciences. The first issue has to do with what type of phenomena resilience entails: is it a characteristic, a capability, a process, an outcome, and/or a philosophy? The second derives from the context of the social realm in which things never return exactly to the original state; there is always an element of change. How can we allow for variance but still keep the concept of resilience separate from other concepts that involve change? The third issue has to do with what drives resilience in the first place. This is generally acknowledged to be some sort of external disturbance, i.e. resilience does not exist ipso facto, but it leaves open the question of how to characterize the triggers that engage resilience and how intense they need to be. The fourth issue has to do with the precise timing of the resilience. Is resilience instantiated as adversity strikes, or can it be before or afterwards? Finally, as we translate from the natural sciences to the social world, we must address the fact that the object of resilience is no longer a material with a clear physical and chemical makeup, but rather something social and often immaterial that can be found at any level of society, from the individual to the system. How can the concept effectively embrace such a broad range of phenomena?

The process of researching and discussing the various cases in this volume has provided several insights on how to frame the concept of resilience as a social phenomenon. Instead of offering a new positivistic definition of resilience, we clarify the concept by delineating it in a similar manner as we would the phenomenon of resilience itself, i.e. by identifying its core elements and its limits or threshold. There are three elements in our understanding of resilience that deal with the key questions stated above: time, essence and adversity.

To begin with, any understanding of resilience must deal with *temporality*. Resilience cannot exist in a single moment but always draws together at least two points in time in which a 'material' or, in our case, social phenomena is compared; i.e. resilience requires that a material at time T2 must recognizably resemble the same material at time T0 despite the adversity that occurred at time T1. The related notion of 'bouncing

back' to a previous state, although meaningful in the context of the material sciences, is problematic from a social science perspective where phenomena and contexts coevolve in a dynamic manner and thus cannot revert to a previous unchanged state. For example, as confirmed by many world events, a counter-revolution—even when successful—cannot return a nation state back to the state prior to the initial revolution (Padgett, 2012).

The element of time is thus directly related to the element of *essence*. In the social world, objects simply do not return to the exact same state as before a disturbance, and debating the extent to which they do or do not seems to be particularly futile. The more relevant question is *how much change is possible within the range of resilience?* For resilience to be in play, some sort of essence must continue over time. While a resilient social phenomenon is not exactly the same as before, it is also not entirely different; rather, it must resemble what it was in its previous state. Essence, however, should not be construed as a singular core, trait, or characteristic. Rather, the continuity of essence can be fruitfully understood in terms of family resemblance, a concept that Ludwig Wittgenstein (1968) first used to explain our understanding of the meaning of words. He wondered how we recognize games despite there being no common element to all games. He claimed that there is 'a complicated network of similarities overlapping and crisscrossing: sometimes overall similarities, sometimes similarities of detail' (Wittgenstein, 1968, par. 66). When we talk about the continuity of essence in resilient social phenomena, we mean that the changes brought by adversity or the preparation for it do not impede our ability to recognize the original material. This recognition is not based on a reductionist approach, seeking a core essence that survives, but rather on this broader commonality. The analogy can be slightly adapted for resilience thinking such that the resemblance is like that of a child to his or her adult self.

Finally, we come to the issue of *adversity*. Again, this is not a binary question, but rather one of intensity: how much adversity is required to activate resilience? We argue that in order to qualify as resilience, there must be a level of adversity that threatens the continuity or essence of the material or phenomena at stake. Drawing on the original physics-based origins of the concept, there must be a risk that the material could break and thus change state or identity as a result. At what point does a forest stop being a forest and resemble a quasi-desert as a result of deforestation and climate change (Walker & Salt, 2006)? Again, what 'breaking' means

in terms of social phenomena is not readily definable, and our purpose here is not to positivistically define the level of adversity but rather to delineate, that is, to rule out minor adversity as a trigger of resilience.

Returning to the five questions about translation into the social sciences, we see that resilience can be a characteristic, a capability, a process, an outcome, or a philosophy, but regardless of which it is, any phenomena claiming resilience must remain within the limits that delineate the threshold of the concept. Those limits can be understood as threefold: the phenomena should extend over time, maintain a continuity of essence, and deal with serious adversity. In Table 12.1, we summarize the many dimensions, both divergent and intersecting, that appear in the various chapters of this volume. This serves as a guide for the remainder of this chapter as we draw parallels and highlight contrasts between the previous chapters, which can help us to better understand the concept of resilience and identify new avenues for future study.

Comparing and Discussing the Cases Thematically

Structure and Agency

Both structurationists and post-structurationists agree, though in different ways, that structure and agency should be reconciled: structure neither occurs naturally, without human agency, nor is it entirely the product of human agency (Parker, 2010). Structurationist theory, building on Anthony Giddens' work, regards structures as 'dual', by which he means that they are 'both the medium and the outcome of the practices which constitute social systems' (Giddens, 1981, p. 27). In this way, structure becomes inextricably intertwined with agency. Post-structurationists such as Margaret Archer criticize this conflation and argue that a study of structure must analytically distinguish the two, even if they are ontologically inseparable (Parker, 2010). The chapters in this volume provide material to address this debate, and they also explicate a point of commonality, i.e. structures are not only constraining but also enabling. This is possible because they depict individuals as 'knowledgeable' and 'capable of putting their structurally formed capacities to work in creative or innovative ways' (Sewell, 1992, p. 4). This ability to apply knowledge is central to the dimension of novelty and learning that we identified in our theoretical framework for resilience in the introduction to this edited volume (Frigotto et al., 2022).

Table 12.1 Dimensions of resilience in the chapters of this volume

	Unit of analysis	Publicness	Kind of resilience	Novelty profiles	Temporal dimensions of resilience	Theoretical/ disciplinary context	Key auxiliary concepts brought to bear on resilience
Chapter 2	Fire brigade	Public organization, accountable for public safety and rescue	Transformative	Major novelty	Foresight, mechanisms	Organization studies, emergency management	Problem solving and sensemaking
Chapter 3	Individual members of the Austrian Military	Public organization, accountable for national safety and defence	Absorptive, Adaptive, Transformative	Minor, medium, and major novelty	Foresight	Organization studies, high reliability organizations	Exaptation, rule-following, and rule-breaking
Chapter 4	Boilermakers in a naval shipbuilding project	Semi-public company in projects that are publicly funded, serving public defence goods	Adaptive	Medium novelty	Mechanisms	High reliability organizations, sociology of professions	Temporary organizing and occupational identity
Chapter 5	Public agencies responsible for coordination and public transport	Public–private organizations, serving public goods and accountable for safety	Absorptive, Adaptive, Transformative	Minor, medium, and major novelty	Foresight	Organization studies, high reliability organizations	Practice view and teleo-affective structures

(continued)

Table 12.1 (continued)

	Unit of analysis	Publicness	Kind of resilience	Novelty profiles	Temporal dimensions of resilience	Theoretical/ disciplinary context	Key auxiliary concepts brought to bear on resilience
Chapter 6	Public managers in New Zealand	Public administration	Adaptive	Medium novelty	Foresight	Public management, human resource management	Leadership, learning, and micro-management
Chapter 7	Public universities	Public organizations dependent on government support and subject to public oversight, serving public goods	Transformative	Major novelty	Foresight, mechanisms	Complex systems, higher education studies	Loose coupling, slack, and requisite diversity
Chapter 8	Scandinavian universities	Public organizations dependent on government support and subject to public oversight, serving public goods	Transformative	Major novelty	Mechanisms, outcomes	Higher education studies, organizational culture	Identity and legitimacy

	Unit of analysis	Publicness	Kind of resilience	Novelty profiles	Temporal dimensions of resilience	Theoretical/ disciplinary context	Key auxiliary concepts brought to bear on resilience
Chapter 9	Opera houses in Italy	Dependent on public funding and advancing societal culture and values	Transformative	Major novelty	Outcomes	Organization studies, performing arts management	Archetypes and identity
Chapter 10	Regional higher education institutions (RHEI) and their regions	Public organizations dependent on government support, subject to public oversight, and assisting with regional public objectives	Transformative (region), Adaptive (organizations)	Major novelty	Mechanisms, outcomes	Regional studies, organization studies	Coevolution and nestedness
Chapter 11	The region as a composite system	Regional governance, public administration, and organizations within the region	Transformative	Major novelty	Outcomes	Regional studies, organization studies	Agency, coevolution, and path dependency

In each of the chapters of this volume, the authors have dealt with both structure and agency in attempts to analyse resilience across a broad range of social systems and organizations. The chapters differ, however, in how they represent the configuration of structure and agency. In the first part of the volume, we see resilience that emerges from agency in a moment of crisis and resilience that is purposefully institutionalized in structure through deliberative foresight activities. The fire brigade in Chapter 2 is an example of the former. Resilience was created in the moment as the fire raged, and only afterwards did it lead to structuration—via learning—which applied the lessons of what happened in the fire, ex-post, in order to institutionalize a more general form of resilience for dealing effectively with future situations. A similar dynamic can be found in Chapter 4 with the boilermakers in the naval ship construction: resilience becomes institutionalized in the structures of the occupation as a result of repeated interactions and negotiations that were not explicitly aiming to build resilience. Chapters 3, 5 and 6 provide examples of deliberative resilience, i.e. the result of a conscious decision to create structures that enhance resilience. Chapter 5, which looks at public transport and coordination agencies, and Chapter 3, which investigates the Austrian military, describe attempts to shape the structure first so as to ultimately influence the behaviour that happens within it, i.e. making the agents act in a resilient manner. In the third part of the book, we see how structure and agency can be depicted as coevolutionary—e.g. in Chapter 10, at universities within peripheral regions, and Chapter 11, amidst the interplay of regional and innovation systems. In these chapters, the structure and agent are deeply intertwined in a process of mutual adjustment. Specifically in Chapter 10, we see how the region changes the structure of the adversity context within which the university operates as an agent; but at the same time, the impacts of the university's decisions as an actor also change the structures of both the higher education and the regional systems. This dynamic is also seen amidst the interplay of identity and resilience that is central to Chapters 8 (universities) and 9 (opera houses). Chapter 7 takes an approach more similar to those in Chapters 3 and 6, looking at the ingredients needed to cultivate resilience. It argues for the creation of structures that constitutively embed slack, diversity and loose coupling.

Nearly all the cases have used a model of resilience that is based on remaining within a threshold rather than simply bouncing back. The threshold model is particularly attuned to issues of structure and agency,

as the threshold is a structural feature within which the agent—be it an individual, organization or institution—operates. However, it would be a mistake to think of the threshold as solely having a constraining function; it also enables the agent's identity and continuity. The threshold demarcates a structural boundary but does not prevent the agent from crossing it. With and against external pressures from other actors and environmental factors, the agent either remains within the threshold or crosses (or is pushed across) it. Typically, the threshold in resilience literature has been depicted as a fixed element; however, we see that it is in fact malleable, shaped both by the actors themselves and other societal forces, which are often a result of the publicness of these actors (Bozeman, 1987, 2004). The model of resilience in Chapter 1 refers to the type of resilience in which change occurs in both the agent and threshold as transformative. Depicting actors and thresholds as both mutually and simultaneously in flux forces us to deal with the complexity inherent in the concept of resilience.

The concept of coevolution, which is addressed explicitly in Chapters 10 and 11, comes from the literature on complex adaptive systems; it observes that the agents in a system do not wait their turn to adapt but are all adapting at once. Evolution then, is not a linear and synchronous process but an emergent one in which different variations succeed based on their fitness to interact with other new variants and the ever-changing environment they create. It should be noted here that when we think about evolution in a social sense, it is not purely random or blind but involves knowledge and learning. It more closely resembles the way breeders attempt to propagate desired phenotypic traits than the natural selection in Darwin's theory. Graham Room (2016) coins the term 'agile actors' to refer to agents in complex social systems that can detect the need for change and adapt themselves. Agile actors are not necessarily resilient, as they may choose to move beyond thresholds, but resilience requires agile actors to manage the coevolutionary pressures from other agents and their environments to avoid crossing a threshold (see Trondal et al., 2022, for a recent discussion linked to the public governance of complexity under turbulence).

Grouping the Chapters on a Novelty and Temporality Matrix

As a means of taking stock of the empirical findings and their future implications, we return here to the elements or overarching principles sketched

out in Chapter 1. Each of the empirical cases is plotted along the core dimensions of: *time* (x axis) and *novelty* (y axis). The resulting set of four clusters (Fig. 12.1) can then be analysed in some detail.

Four out of the 10 cases are located within the foresight stage, with the remaining six being evenly split between mechanisms and outcomes. As for novelty, the majority of the cases (8 out of 10) pertain to situations, where either fully (six cases) or partly (two cases), the resilient triggers or drivers were unknown (major), with the remaining cases split between medium and minor levels of novelty. Four of the 10 cases (Cluster 1) encompass more than one temporal dimension. What do these cases have in common, if anything? All of them are public agencies, providing valuable public services and subject to relatively high levels of political and economic interference ('publicness') by external stakeholders such as governments, funders and surrounding communities (Bozeman, 1987). Three of the four cases pertain to higher education institutions (HEIs) operating in increasingly dynamic and volatile environments, laden with national and international competition (for funding and prestige), and
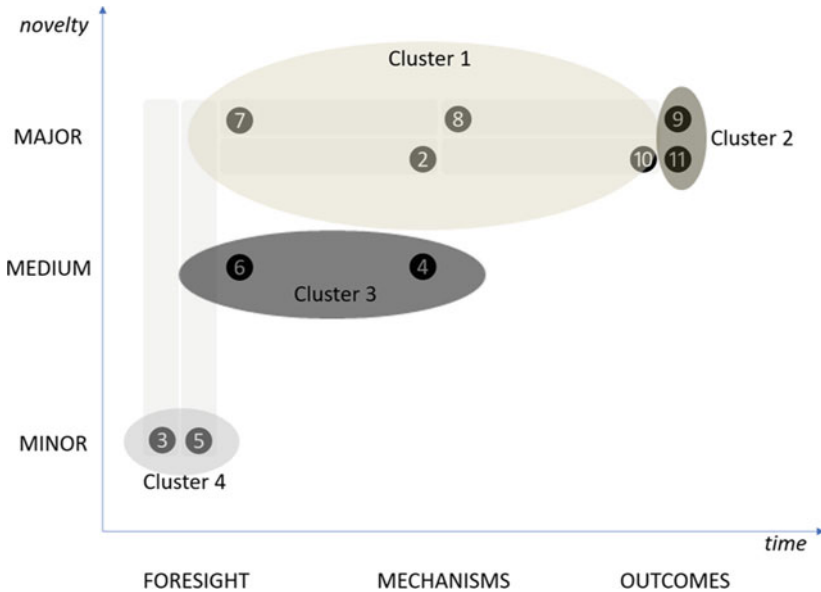

Fig. 12.1   Mapping and clustering the volume's empirical contributions

subject to regulations at the national level and increasingly at the supranational (e.g. EU) level (cf. Hazelkorn et al., 2018). Studies resorting to systems thinking have shed light on the complexity inherent to HEIs and systems, suggesting that they are deeply embedded or nested in a multiplicity of subsystems (science, economy, culture, polity, etc.), operating at multiple levels of analysis (local/regional/national/global) that, as a result, coevolve with one another (Pinheiro & Young, 2017). Having historically been categorized as resilience organizations by demonstrating the ability to adapt while retaining a sense of identity (Wittrock, 1985), HEIs the world over are now faced with a series of disruptive challenges, testing their ability to absorb externally driven change while retaining a certain degree of internal stability (cf. Tapper & Palfreyman, 2010). The remaining case in this first cluster (Chapter 2) concerns a firefighter unit, which belongs to the broader category of high reliability organization (HRO). The latter are notorious for their low tolerance towards embracing risk, given the considerable personal and societal costs resulting from potential disturbances (cf. Sutcliffe, 2011). When it comes to novelty or adversity profiles, the (3) cases involving HEIs face considerable external pressures for change in light of external political and economic agendas (governments and other national and regional stakeholders) associated with creeping 'instrumentalization' (Olsen, 2007). The danger here, from the perspective of internal actors and in the context of the overall resilience of both the HEIs and the higher education system as a whole, relates to attempts by multiple external parties and their vested strategic interests at *co-optation* (Selznick, 1966) of internal goals and functions. Instrumentalization of higher education, studies have shown, tends to focus on short-term imperatives associated with managerialism dimensions like efficiency, performance and responsiveness at the expense of critical long-term aspects (while remaining within a threshold/retaining a sense of identity) such as diversity, autonomy and explorative behaviour (Pinheiro & Young, 2017; see also Pekkola et al., 2021). Finally, one key aspect that binds together the four cases is that for the organizations involved to provide their services to the public in an efficient and legitimate way, they rely on high levels of *trust* or social capital among societal actors (Putnam, 2001), i.e. students, parents and local communities in the case of HEIs, and fellow citizens for firefighters.

As for the remaining (6) cases, which are located within a single temporal dimension, two of these (Cluster 4) correspond to situations

where resilience is categorized as an ex-ante process with the corresponding levels of novelty ranging from low to medium to high. The cases in question all pertain to entities centred on ensuring public safety, within the contexts of transportation (Chapter 5) and national defence (Chapter 3). In both cases, resilience is leveraged, on the one hand, in the form of 'rule-following' and 'routine-behaviour'—given the anticipated nature of adversity triggers—and, on the other, by means of 'out of the box' experimentation and/or 'rule-breaking' in light of emerging contextual circumstances where actors are expected to improvise in situ. As a result, in both cases, actors act as relatively autonomous entities or subsystems that are embedded or nested within a larger system of hierarchical interrelations based on multiple feedback mechanisms (Walker & Salt, 2006). Actors operate in highly stressful and volatile situations where the ability to remain calm, i.e. handle emotions and retain a sense of control by acting rationally, plays a key role. By covering a wide spectrum of novelty situations in the context of anticipation or foresight, the cases in question adopt a *processual view of resilience* substantiated with trial and error alongside habituation (cf. Kayes, 2015). This is aligned with the notion that 'the true antecedent of resilience is a cultural infrastructure, an embedded habit, which allows for responding' (Giustiniano et al., 2018, p. 130). What is more, from a dialectical standpoint, these two cases reflect the existing tensions between formal and informal organizing, which are thought to be at the heart of resilience: 'Tensions thus become seen as sources of energy and the dialectical synthesis can be seen as the means of benefiting from the creative energy that the tension generates (Cunha et al., 2002)' (Giustiniano et al., 2018, pp. 131–133).

Cluster 3 is composed of two empirical cases where the levels of novelty are thought to be moderate, representing two specific temporal dimensions: foresight (Chapter 6) and mechanisms (Chapter 4). In the case of public managers (Chapter 6), adversity derives from the ambiguous context characterizing their daily activities in the form of complex tasks and the need to address multiple stakeholders. As rational actors, formal managers devise a series of mechanisms to anticipate or foresee such challenges while attempting to cope with ambiguity and surprise; what Herbert Simon famously termed as pertaining to 'bounded rationality' (1991). Similarly, Chapter 4 describes how boilermakers involved with highly complex and sensitive projects cope with task ambiguity/complexity by drawing upon both tacit and codified forms of knowledge obtained through training and experience (cf. Edmondson

et al., 2003) in addition to shared norms and values resulting from professionalization processes (Forsyth & Danisiewicz, 1985). In contrast to the first case where resilience is trigged ex-ante, in the latter situation actors devise mechanisms to overcome challenging and somewhat unexpected situations as they emerge (*in-actus*). In so doing, they enact context-specific learning processes that build upon a combination of the *exploitation* of existing skills and knowledge and *exploration* efforts substantiated on trial and error aimed at reconfiguring cause and effect relationships (March, 1991). Scholars have shown that, when shifting from routine to novel learning situations, factors such as values, identities and collective commitment—aspects intrinsically associated with occupational groups—play an enabling role (Kayes, 2015, p. 17). But, what, if anything, brings together the two cases composing Cluster 3? First, both situations are examples where individual and collective behaviours under novel circumstances are structured around *roles*.

> Roles tell organization members how to reason about the problems and decisions that face them: where to look for appropriate and legitimate informational premises and goal (evaluative) premises, and what techniques to use in processing these premises […] Each of the roles in an organization presumes the appropriate enactment of the other roles that surround it and interact with it. Thus, the organization is a role *system*. (Simon, 1991, pp. 126–127)

In both empirical cases, managers—as experienced learners—play a crucial role in enabling growth strategies at the individual/employee level by, first, detecting possible failures or challenges and, second, by mobilizing resources to tackle them while supporting their subordinates to explore alternatives to solve novel situations. In so doing, *trust* and shared *norms* play a critically important role, allowing individuals to benefit from sharing knowledge with and learning from one another (cf. Kayes, 2015). Earlier (quantitative) studies centred on the roles played by communication and trust in fostering resilience to cope with surprises like natural disasters, health pandemics and terrorism show a significant positive effect accrued to trust on the internal coordination of crisis communications (Stern & Baird, 2015). In the case of boilermakers, we argue that individual and collective learning (as well as trust) is leveraged by rotating members in the form of temporarily assembled teams (cf. Packendorff,

1995). In the context of organizational learning, March (1991) refers to the importance of employee turnover, particularly in novel situations:

> Rapid socialization of individuals into the procedures and beliefs of an organization tends to reduce exploration. A modest level of turnover, by introducing less socialized people, increases *exploration*, and thereby improves aggregate knowledge. The level of *knowledge* reflected by the organizational code is increased, as is the average individual knowledge of those individuals who have been in the organization for some time. (March, 1991, p. 79; emphasis added)

The potential for conflicts derived from the inclusion of newcomers is minimized since, as an occupational group, boilermakers share a set of professional norms, values, and identities, resulting in higher levels of trust, which in turn foster knowledge sharing and learning, including explorative behaviours centred on finding novel solutions to emergent problems (March, 1991).

Finally, when it comes to Cluster 4, the (2) cases in question, despite being rather different in nature, both pertain to high levels of adversity with resilience mechanisms being triggered following major structural change in their respective organizational fields. They represent circumstances where the systems in question, opera houses (Chapter 9) and autonomous regions (Chapter 11), are deeply embedded or nested in larger societal systems or 'institutional orders' (Thornton et al., 2012), such as the cultural, economic and political spheres upon which they are dependent for both resources (Pfeffer & Salancik, 1978) and legitimacy (Deephouse & Suchman, 2008). In this regard, both cases attest to the ability of their respective subsystems 'to survive and persist within a variable environment' (Meadows, 2008, p. 76). Opera houses, as fiduciary institutions with a life and identity of their own (Selznick, 1996), much like the Scandinavian universities in Chapter 8, required a readjustment of the internal norms and values regulating the subsystem in light of external dynamics and imperatives without resulting in identity loss. In this regard, one could refer to successful adaptation in the context of disruptive environmental change through 'fusion and hybridity' (Padgett, 2012, p. 125), where old (deeply institutionalized) and new (emergent) features, shaping agents' behaviours and identities, were brought together and coexist to some extent (cf. Berg & Pinheiro, 2016). By attaching new (identity) rules to existing ones, the original rules that structured actors' behaviours

across the subsystem are gradually adjusted to consider emerging circumstances (Mahoney & Thelen, 2010, p. 16). The Basque case attests to the importance of both *path dependencies* and key *agents* (including policy entrepreneurs) at different levels of the national and regional subsystems (Hay & Wincott, 1998). According to Bucheli and Wadhwani (2013, p. 111), 'adopting a historical approach to studying [the emergence and development of] institutions will enhance our understanding of institutions as a historical process rather than as abstract, reified structures' (see also Padgett & Powell, 2012). Moreover, following Fleming et al. (2012, pp. 537–538), the Basque case confirms the catalysing role played by local institutions in the mobilization and coordination of regionally embedded networks of key agents (universities, forms, government agencies, etc.) working together to enhance adaptability and, hence, the overall resilience of the regional system as a whole.

Towards an Interdisciplinary Resilience Framework for Resilience Organizations and Societies

As indicated at the outset of this edited volume, the concept and phenomenon of resilience first originated in the physical sciences, being subsequently adopted across a wide range of disciplinary fields and their respective epistemological, methodological and theoretical traditions. This, in turn, has led to challenges when it comes to definitions and approaches, most notably as regards comparisons across disciplinary domains. The chapters composing the bulk of this volume attest to this eclecticism when it comes to definitions and conceptualization, but they share a common interest in approaching resilience from a more systemic or holistic perspective. The limited overlap of references among the empirical chapters signals the poor cross-fertilization of resilience studies across research areas, as well as a high specialization of studies in their respective fields. An analysis of such references showed that chapters map onto 114 different references on resilience and that only nine of these are shared between more than one chapter: Lengnick-Hall et al. (2011); Linnenluecke (2017); and Walker and Salt (2006) appear in three reference lists, while Bristow and Healy (2014); Fisher et al. (2018); Folke et al. (2010); Frigotto (2018); Pinheiro and Young (2017); Vogus and Sutcliffe

(2007) appear in two. This overview supports the claim that a stronger interdisciplinary approach to resilience is needed.

A major challenge pertains to the problem of 'conceptual stretching' associated with defining the limits of resilience as a phenomenon (Roe & Schulman, 2008). As highlighted in the edited volume's introduction in Chapter 1, following Giustiniano et al. (2018, pp. 33–37), there are several related resilience constructs such as agility, flexibility and anticipation that are worth taking into consideration. It is often the case in the social sciences that even if we use the same terms, we do not necessarily attribute the same meanings, thus definitions and clarifications are the first necessary step to engage in cross-disciplinary collaborations.

There is an ongoing debate within the scientific establishment about the value of and trade-offs between classic disciplinary-based inquiries and more interdisciplinary ones (cf. Nowotny et al., 2002). One of the arguments defending the latter approach is that it is more suitable to address the multiplicity of 'wicked problems' (Brown et al., 2010) or 'grand challenges' facing humankind, such as climate change, urbanization and rising inequality. This has led to renewed calls for a new mode of knowledge production ('Mode 2') based on collaborations across disciplinary fields in the context of problem-solving and application (Gibbons et al., 1994). Yet, for this to be the case, it is still a requirement for interdisciplinary teams of scientists to be composed of ('Mode 1') basic science specialists in their respective domains if fruitful dialogues are to become a reality (Broto et al., 2009). This is a necessary yet not a sufficient condition for interdisciplinarity to bear fruit, and many other enabling factors need to be present.

According to Klein (2000, p. 7), interdisciplinarity and specialization are parallel, mutually reinforcing strategies: 'The relationship between disciplinarity and interdisciplinarity is not a paradox but a productive tension characterized by complexity and hybridity'. In a more recent contribution on the topic in which the author expands the discussion to encompass transdisciplinary dimensions, attention is paid to the importance of devising a *shared vocabulary* that is conducive to such endeavours (Klein, 2018). In so doing, the author underscores the pivotal relationship between *communication* and *learning*, anchored in socio-cognitive structures for interdisciplinary collaborations that are central to fostering a culture of cooperation and communication. Given the limited scope and ambition of this edited volume, we will primarily focus here on the

conditions that are likely to foster integrative, interdisciplinarity arrangements among social scientists in the context of resilience thinking and scholarship.

When it comes to interdisciplinary collaborations, MacMynowski (2007, pp. 8–9) outlines *four* possible scenarios, namely conflict, tolerant ambivalence, mutual identification and cooperation, and transformation. Of these, the last two are particularly relevant in the context of this volume and future initiatives. The scenario characterized by 'mutual identification and cooperation' is one where researchers agree on basic ontological and epistemological underpinnings and analytical structures. However, despite this convergence, the tendency here is to approach research questions from the standpoint of a single analytical framework associated with a specific disciplinary tradition rather than attempting to develop a truly integrative approach that takes into consideration synergies across the various traditions. This aim is achieved in the fourth and most demanding scenario, termed 'transformation',[1] which entails a substantial reorientation and recombination of knowledge claims.

> [Transformation] begins with recognition of a common problem at the intersection of very different conceptual, philosophical, and methodological standpoints. The understanding of the problem, the research design, and the analysis recombine elements from intellectual lineages with little similarity, past cooperation, or shared theory and philosophy […] Traditional associations with research domains, boundaries, and the distribution of power need to be broken down and transformed. This is a multilevel, intensive reflection and re-creation process. (MacMynowski, 2007, p. 9)

Moreover, for MacMynowski (2007), transformation requires not only a move beyond disciplinary silos but also outside academic walls and isolated projects to engage with multiple knowledge users and other external stakeholders in the spirit of mutually beneficial coproduction and co-creation (Brandsen et al., 2018).

How are we to move from sporadic collaborations towards more integrative approaches anchored in cooperation/identification and/or transformation in the context of resilience thinking and scholarship? For MacMynowski (2007), this entails addressing three important dimensions

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[1] It is important to stress that this term should not be confused with 'transformative resilience', which was discussed in the introduction and conclusion of this volume.

or stages associated with interdisciplinary collaborations as an emergent, dynamic, multifaceted and coevolving process (Fig. 12.2). Each stage addresses a set of critical queries that provide the foundation to move to the next stage while acknowledging that the process is non-linear and thus iterative in nature.

The first stage, *differentiation*, sheds light on a set of epistemological queries centred on how the (new) knowledge is generated. Pertinent questions include, but are not limited to: Is the overall intellectual motivation of the project to predict, to explain, or to interpret? What are the goals of the project? What is the relationship between the subject/object of research and the researchers? What are the aim(s) and purpose(s) of the project? Ideally, the differentiation stage is undertaken at the outset, yet it is also possible to do this at any other stage of the process, iteratively, as research evolves and (new) knowledge is generated and reconstructed (MacMynowski, 2007, p. 10). In the second phase, *clarification*, participants are to critically and openly discuss the sources and purposes of their
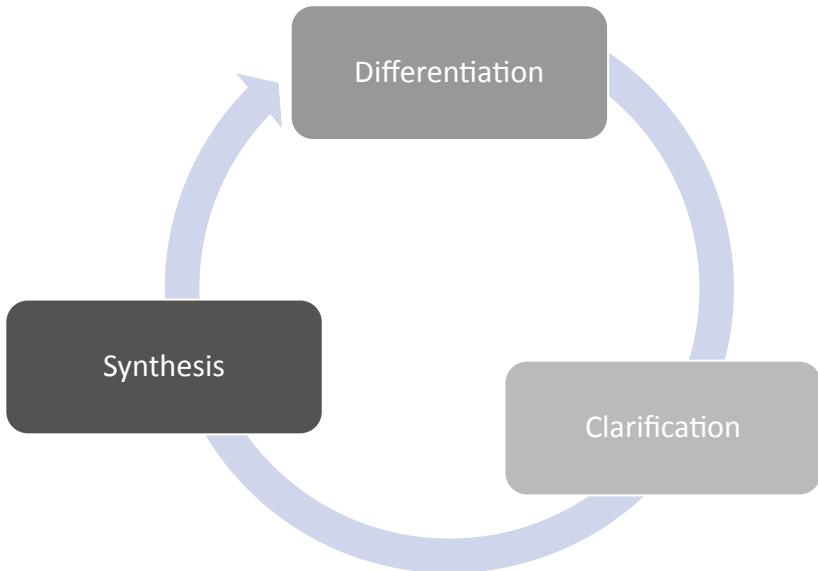

Fig. 12.2 Fostering interdisciplinarity through an iterative process (*Source* Authors' own, based on MacMynowski [2007, p. 11])

different perspectives while addressing questions such as the following: What are the epistemic, rhetorical or normative purposes that are at the heart of differences in perspectives (i.e. potential conflicts) among participants? How are validity, reliability and certainty to be determined? What alternative research approaches (leading to different answers and perspectives) are feasible? Finally, *synthesis* pertains to 'the intellectual fruit after the labour of differentiating and clarifying the research models, concepts, and philosophies at hand' (MacMynowski, 2007, p. 11). Critical queries include: Is it possible to conceive of the subject/object under investigation or research system in a different way? How do the different elements (philosophy, theory, methods) fit together or combine with one another? What gestalt(s) can be created that otherwise could not be if research was undertaken independently within a single discipline or perspective? Finally, as alluded to earlier, the 'process of differentiation, clarification, and synthesis is likely to be an iterative undertaking, repeating itself throughout research design, resolving research problems, interpreting results, and determining conclusions' (MacMynowski, 2007, p. 12).

Based on our experiences, both positive and negative, while undertaking this joint project on resilience with colleagues from different disciplinary traditions and subfields, and regarding future interdisciplinary endeavours centred on a better understanding of the complex and multifaceted phenomenon of resilience within organizations and in society, we offer the following set of recommendations. We conducted two face-to-face workshops over a two-year period with all the participants, and as pointed out above, scholars from different strands need to get to know one another and openly discuss their ontological, epistemological and normative positions. The goal here is not necessarily to reach a consensus but instead to foster awareness and joint understanding of the perspectives and central postulates that drive scientific work and, ultimately, cultivate professional identities. An open, inclusive and reflexive communication process, as was the case with our own project, is likely (though we did not always succeed) to result in joint learning among participants. In an ideal scenario, the former process is anchored in shared socio-cognitive structures, providing a robust foundation for meaningful and sustainable cooperation and, most importantly, identification in the form of a distinct interdisciplinary outlook. Identification, in turn, has the potential to provide the basic foundation for moving beyond traditional disciplinary boundaries, clashes of scientific paradigms, and power structures,

substantiated in a shared respect for one another and a fair distribution of authority or influence among the participants. Given the complexity and historicity (temporal dimension) associated with resilience as a social science phenomenon, by 'participants', following MacMynowski (2007), we refer here to all the relevant actors, practitioners included, that both inhabit and have an intrinsic (tacit) knowledge of the structures, mechanisms and antecedents underpinning resilience. Their knowledge and insights are paramount for unveiling hidden structures and underlying processes affecting the behaviours of social actors, individually and collectively. Several empirical chapters in this volume attest to the importance of this partnership between outsiders (researchers) and insiders (practitioners), but we would argue that this mutually beneficial relationship needs to take a more explicit and egalitarian form. All types of knowledge, codified and tacit, are equally valuable in the quest to open the black box associated with resilience behaviour and its direct and indirect effects on individuals, organizations, organizational fields, institutions, and society at large.

Finally, as far as future interdisciplinary studies on resilience are concerned, we propose four possible directions. First, and in light of the fact that, as open systems, all organizations are subject to external forces (Scott, 2003) and that the cases in this volume only included those collective actors characterized as having a high degree of publicness (Bozeman, 2004), future studies encompassing a broader range of organizational types (public, private, hybrid, etc.) and degrees of novelty (low, medium and high levels) could shed light on the extent to which resilience antecedents and mechanisms affect and play out differently across a broader population. Second, the volume's empirical findings lend support to the claim that resilient organizations are, in essence, learning entities—even if they resort to different strategies to learn about themselves and/or their surrounding environments (March, 1991). Future inquiries could, for example, shed light on the key actors, structures and processes associated with different types of learning (and their interactions) at different temporal scales—before, during and after the unfolding of major events triggering resilience behaviours. Third, following systems thinking (Walker & Salt, 2006), there is a need to continue to open the black box associated with nestedness between the micro (agents), meso (organizations) and macro (society) levels of analysis, both within organizations and across organizational fields. Most notably, it is imperative to understand how these levels emerge, coevolve and interact with one

another in non-linear ways. Finally, methodologically speaking, future studies should seriously consider adopting both mixed methods (Bryman, 2006) and longitudinal design approaches as a means of capturing the complex and dynamic essence of resilience as a property, process and outcome.

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