



HAL
open science

Introduction. Recovery, resilience and repairing: for a non-reductionist approach to the complexity of post-disaster situations

Laura Centemeri, Sezin Topçu, Burgess James Peter

► **To cite this version:**

Laura Centemeri, Sezin Topçu, Burgess James Peter. Introduction. Recovery, resilience and repairing: for a non-reductionist approach to the complexity of post-disaster situations. Burgess, J. Peter; Centemeri, Laura; Topçu, Sesin. Rethinking Post-Disaster Recovery. Socio-Anthropological Perspectives on Repairing Environments, sous la direction de Laura Centemeri, Sezin Topçu et J.Peter Burgess, Routledge, 2022. hal-03364670

HAL Id: hal-03364670

<https://hal.science/hal-03364670>

Submitted on 4 Oct 2021

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Introduction: Recovery, Resilience and Repairing. For a Non-Reductionist Approach to the Complexity of Post-Disaster Situations

Laura Centemeri

ORCID.org/0000-0001-6519-3948

Sezin Topçu

ORCID.org/0000-0001-6344-3747

J. Peter Burgess

ORCID.org/0000-0002-8126-9372

Abstract

The introduction reviews the most relevant existing approaches to the study of recovery after disaster. It introduces a framework that is based on the analysis of repair processes and *dispositifs*, which is grounded in the assumption that any disaster situation is marked by the uncertainty of its ‘what-ness’. This ‘what-ness’ depends on the diversity of actors experiencing its consequences and their involvement in a variety of processes of acknowledging, evaluating and managing these consequences at different scales. From this perspective, researching processes of recovery consists in following how the disaster and its consequences are made the object of a variety of struggles around the meaning of what happened and how it affected the given order of things and the possible future. The chapter illustrates how this approach overcomes some of the limitations of a recovery analysis framework that is based on the notion of resilience, pointing to the need to explore the multiple meanings of repairing environments in order to explain how communities recover after disaster. The chapter also highlights three different meanings of repairing in the field of

recovery: repairing as redress, repairing as technical fixing and repairing as the everyday maintenance of one's own world in material, multispecies, experiential and emotional terms.

Recovery, Resilience and Repairing. For a Non-Reductionist Approach to the Complexity of Post-Disaster Situations

Laura Centemeri, Sezin Topçu, J. Peter Burgess

As a young girl growing up in Poland during World War II, the Polish poet and Nobel Prize winner Wislawa Szymborska experienced first-hand the dilemmas of a return to normal life after a catastrophe. In her acclaimed poem 'The End and the Beginning' (Szymborska 2001), she draws a pointed, penetrating picture of post-war social conditions, recalling how the mundane need 'to push the rubble / to the side of the road, / so the corpse-filled wagons / can pass' and to 'prop up a wall', 'glaze a window', 'rehang a door' and rebuild the bridges slowly but inexorably undermined the quest for responsibility and any examination of causes and effects. Showing how the people became progressively caught up in everyday matters and preoccupations and lost interest in the 'dull' discourses about the past, Szymborska's poem enacts the emotional, moral, social and political tensions between forgetting and remembering that are strewn across the paths forged by damaged communities as they endeavour to 'remake a world' (Das *et al.* 2001) after a catastrophe.

Striking a different tone, the author, film-maker and climate activist Naomi Klein denounced in her best-selling book *The Shock Doctrine* (2007) the way in which certain proponents of neoliberalism, in particular in its earliest form in the Chicago School movement led by Milton

Friedman, envisaged exploiting major catastrophes (from wars to ‘natural’ disasters like the tsunami in Sri Lanka in 2004 and Hurricane Katrina in 2005) in order to implement radical free market reforms. Klein argued that the logic of neoliberalism sees post-disaster situations less as catastrophic breakdowns in need of repair than as windows of opportunity for socio-economic change that are rife with interest-based struggles. The notion of ‘disaster capitalism’, despite questions over its lack of analytical clarity (see Wisner 2009), has since gained currency amongst critical disaster researchers and social movement activists (see Gunewardena and Schuller 2008; Fletcher 2012; Schuller and Maldonado 2016).

Albeit in very different ways, Szymborska and Klein thus both touch upon the same fundamental sociological, political and ethical questions. How is a social fabric preserved – or challenged – during a disruptive event experience? What is indispensable to the continuity of a society’s values, the cohesion of its communities and the minimum functioning of its institutions? What can be left behind, replaced or remodelled? More fundamentally, who decides these things? Who has the legitimacy and authority to determine what is critical and non-critical, essential and non-essential? And once this is determined, who is responsible for organizing the complex task of repairing a society?

In this volume, we propose a perspective on disaster recovery that goes beyond the institutional and managerial challenges, definitions, descriptions, analyses and prescriptions to present a more socially, politically and ethically engaged questioning of what it can and should mean to repair a society that has been struck by disaster. Throughout the book, we try to enrich an approach to recovery that centres on resilience, while discussing some of its limitations. The work takes as its starting point the diversity of motivations, means, strategies and tools that are brought into play to cope with situations of socio-ecological disruption. This

diversity, as the volume will show, is not immediately compatible with an approach to recovery that sees a community disaster as just a technical, logistical or infrastructure problem. In an attempt to revolutionize this monolithic view of human vulnerability and provide it with colour and texture, this book will mobilize the notion of ‘repair’ and show how it offers the possibility of addressing post-disaster recovery in all its complexity, sociality and humanity.

In the broad and diverse field of disaster research and management,¹ *recovery* is defined as the process of a return to normalcy, or the ‘period of time where deliberate actions are undertaken to routinize everyday activities of those individuals and groups whose daily routines have been disrupted. These activities may restore old patterns and/or institute new ones’ (Quarantelli 1999: 3).

Traditional approaches to recovery have been criticized for being limited in their temporal scope and for being poorly equipped theoretically (Berke *et al.* 1993; Passerini 2000; Weidner 2009; Tierney and Oliver-Smith 2012; Aijazi 2015). While disaster research on recovery was initially centred mainly on questions relating to the appropriate reconstruction of housing, shelter, resettlement, relocation, displacement and psychological and psychosocial recovery, the field began in the 1990s to address issues such as the roles of institutions, the state and civil society actors in recovery policy-making and implementation. The focus has been on coping strategies, adaptation mechanisms and more recently resilience building. However, the research has rarely addressed questions of social change after disasters through long term studies on recovery outcomes, including the role played by pre-existing socio-economic conditions in shaping post-disaster trajectories. This reveals a still largely dominant understanding of disasters as *temporally delimited phenomena*.²

This book aims at challenging such an approach. In so doing, it aligns itself with a tradition of research on disaster that first emerged in anthropology and then, more recently, in STS studies and that requires us to *expand time frames in the study of disasters*, to problematize assumptions about the onset of crises and to recalibrate assumptions about the scope and duration of their aftermath (see Oliver-Smith 1986; Oliver-Smith and Hoffman 1999; Dowty and Allen 2011; Revet and Langumier 2015; Fortun *et al.* 2017). The book focuses on this process of recalibration as a way to fully understand, on the one hand, the pervasive, long-lasting, ‘slow’ (see Nixon 2011; Knowles 2014) nature of the impact of disaster both on societal or community life and on individuals’ environments and their bodies and, on the other, how diverse forms of injustice structurally inscribed in a social fabric can contribute to increasing vulnerability to disastrous events. In addition to social injustice, the recent research on disasters has shown that questions of environmental (Schlosberg 2007), epistemic (Allen 2018; Frickel 2008) and narrative (Barca 2014) injustice are of crucial importance to understand the specific trajectories of recovery after disaster.

Consequently, the approach to recovery developed in this volume connects with the current debates and recent developments in social theory and takes into serious account the fact that the ways in which we think about disaster have ‘profound operational and political consequences’ (Fortun *et al.* 2017: 1008; see also Kreps and Drabek 1996). In this regard, the contributions collected in this volume all refer, albeit in a diversity of perspectives, to the adoption of relational approaches (like pragmatism) to the interpretation of disaster situations intended as ‘problematic situations’, in which the moral, epistemic, political and material dimensions are intertwined. As others authors have pointed out (see Go 2016; Doucet 2018), relational approaches in social sciences allow for a fruitful dialogue with perspectives inspired

by postcolonial theory and ‘ontological politics’ which are attentive to how divergent knowledges and practices ‘make worlds’ (see De la Cadena and Blaser 2018).

Recovery and the disputed ‘what-ness’ of disaster

There is a general agreement in the literature that disasters are social phenomena, regardless of the hazardous agents involved. Phenotypic classifications that distinguish disasters according to agent – separating, for example, natural disasters from technical disasters and public health disasters from ecological disasters – have been increasingly contested for their lack of analytical clarity. In line with Perry (2018: 14), a consensus has formed around the definition of disaster as a ‘fundamental disruption in the social system (of whatever size) that renders ineffective whatever patterns of social intercourse prevail’. Its ‘causes rest in the *social structure, social interactions* and the *environment* as a whole’ (*ibid.*: 15, our emphasis). With regard to its disruption of patterns, a disaster can trigger a ‘chain of occurrences’ that can potentially result in the long-lasting transformation of previous structures and practices, a defining trait of what Sewell (1996) called ‘historical events’. ‘Historical events’ here refer to temporally extended situations that reveal the interplay between action, culture and structures (including material infrastructures and the environment) in the production of social transformation. This book aims at exploring, through a focus on repair processes and *dispositifs*, how social structures and patterns undergo this transformation, what the causes and correlates of the transformation are and the multilevel reach of its aftermath.³

In her literature review of ‘what we know, or think we know, about long term disaster recovery’, Passerini (2000: 67) argued that the transformative potential of disasters is more often than not defused by ‘a myriad of structural and cultural forces that keep people from

considering or embracing change', while, at the same time, disasters can sometimes overwhelm the capacity of communities to recover. Moreover, when change does occur, it happens on different scales, in a variety of forms, at different rates and in a time span that is impossible to predetermine. Indeed, the transformative potential of a disaster can stay latent until broader conditions for change are in place.

Similarly, the issue of scale is often debated in the literature on recovery, where it is understood in terms of the social level, or unit, from which the 'success of recovery' should be assessed (Quarantelli 1999). Disaster recovery is in this sense understood as a finite objective that can be achieved and subsequently dispensed with. It is a measure that remains external to the process, a measure that is determined and imposed by the observer. As a consequence of the focus on 'success' at the expense of 'social change', there is often a lack of perspective and clarity in the assessment. The historical situation and the observer's value projections silently shape the normative underpinnings of disaster management as well as the specific meanings attributed to 'success'. Successful for whom? According to whom? Such questions are often neglected in the managerial approaches to recovery.

This same lack of reflexivity on normative assumptions can be found in the currently fashionable idea of recovery as 'Building Back Better'. This catchphrase was coined by the former US president Bill Clinton in the aftermath of the 2004 Indian Ocean earthquake and tsunami and was developed into a list of 10 propositions conceived as operational guidelines for the humanitarian post-disaster intervention. As shown by Benadusi in the case of Sri Lanka (2015: 93), however, the direct importation of this idea, with no public discussion of its assumptions and aim, has encouraged the proliferation of conflicting interpretations of the slogan.

An analysis of the epistemic, cognitive, normative, financial and judiciary tensions that pervade the process of recovery are at the core of the contributions gathered in this book. The focus is not on developing tools and means for measuring disaster impact and recovery but on providing analytical tools to explore ‘the cultural, social-organizational, and political-economic conditions/options that affect how reconstruction occurs (for better or worse)’ (Passerini 2000: 71). The matter of whether or not recovery from a disaster is possible, or even desirable, at least for some actors, is also a salient question given serious consideration by the contributors to the volume. The analytical frameworks mobilized are grounded in the assumption that any disaster situation is marked by the uncertainty of the ‘what-ness’ (Quéré and Terzi 2014) of the disaster, which depends on the diversity of actors experiencing its consequences and their involvement in a variety of processes of acknowledging, evaluating and managing these consequences at different scales. Disasters can be sociologically analyzed as ‘problematic situations’ in which, following the pragmatist philosopher John Dewey, the usual ways of making sense and doing things do not work. Actors deal with this practical and existential uncertainty by engaging in the contentious process of ‘inquiry’ in order to cognitively and normatively describe the situation in terms of attributing causes and responsibilities and identifying damages and victims (see Cefaï 2016).

The contributors to this volume share a similar approach in researching processes of recovery that consists in following how the disaster and its consequences are made the object of a variety of *sense-making struggles*, that is, struggles around the meaning of what happened and how it affected the given order of things and the possible future (Centemeri 2010; 2015; see Chateauraynaud and Debaz 2021 – in this volume). These struggles are interlinked with interest-based struggles and power-based struggles that more often than not reproduce the pre-

existing social hierarchy and forms of marginality, as shown by feminist and postcolonial scholars in disaster studies on the Global South (see Fortun 2001; Choi 2015). There is evidence, however, that disasters in the Global North also usually intensify pre-existing conditions of inequality in the long term (Passerini 2000). We believe that in order to explain the dynamics through which such inequalities are maintained and reinforced, it is crucial to understand how a shared sense of the ‘what-ness’ of the disaster is generated and stabilized, at least temporarily because we know that this stability is always potentially open to future revision (see Gorostiza and Armiero 2021 – in this volume).

These sense-making struggles take place in a variety of ‘arenas’ (Cefaï 2002; see also Hiltgarner and Bosk 1988) where the actors concerned come into contact with one another. An ‘arena’ can be defined in general terms as a *dispositif* that brings together speakers and their audiences and that defines a mode of confrontation either between the speakers or between the speakers and their audience (Dodier 1999). Arenas organize a form of collective reflexivity – and ‘reflexivity loops’. They are specialized to varying degrees according to the rules that define the conditions for access (Dodier and Barbot 2016). We can therefore distinguish between technical-expert arenas, judiciary arenas, media arenas, parliamentary arenas and other arenas of public or expert debate. In such arenas, actors express conflicting understandings of the disaster and conflicting normative expectations about what should be done to recover, what is worth recovering and what types of processes can be considered to be a ‘good’ recovery.

The contributors to this book also examine sense-making struggles in the context of ‘governing (by) disasters’ *dispositifs*. As highlighted by Revet and Langumier (2015) in their anthropological approach to *dispositifs* in disaster situations, ‘frictions’ (Tsing 2005) are

ubiquitous between, on the one hand, the variety of *dispositifs* that are meant to govern disasters and, on the other, the actors' 'normative expectations' (Dodier and Barbot 2016) and the diversity of their practical 'modes of engagement' (Thévenot 2007) in the situation. This shows 'the fundamental heterogeneity of the resources that allow individuals and groups to assess risks and position themselves relative to them' (Dodier 2015: 224).

The fact that governing by disasters is now a distinctive feature of contemporary societies should not lead us to assume that the integration of disasters into a 'general economy' is a smooth process (Dodier 2015: 226). If we assume that the power of *dispositifs* automatically lies in ensuring that the actors' practices and normative expectations align with one another, there is the risk we overlook any frictions or ignore their importance, both in the making and in the unmaking of hegemony (Tsing 2005: 6). Conflicts of interest and power struggles are thus constantly interwoven with processes that aim at defining a shared 'sense of things' across a variety of arenas, *dispositifs*, scales and temporalities (Chateauraynaud 2016).

These processes are of crucial importance in explaining the specific observable path to recovery after a disaster, and they cannot be properly understood if the fact that disasters also disrupt everyday life space by affecting people's 'attachments' (in the sense of Hennion 2004) is not taken into account.

Direct experiences of death, destruction, toxicity and displacements present the victims of disaster with three vastly different but intertwined needs. They have to find ways of meeting basic physiological requirements, rebuild familiarity with people and places and deal with the irreversibility of loss. Revet and Langumier (2015: 5) noted that:

The everyday life of ‘disaster victims’ and those ‘displaced’ by catastrophe cannot be summarized solely in terms of the management of a day-to-day existence that has been impacted by these events. Far from the cameras and in unspectacular fashion, life very quickly resumes its course on the ruins and traces of disaster. [...] The issue is therefore no longer to recognize and account for what disaster destroys but what it contributes to producing, the social recompositions it brings about.

From a different perspective but with a similar focus, Aijazi (2015:16) introduced into disaster studies, or more specifically recovery studies, the perspective of social repair developed by Das in her work on and with survivors of violence (Das 2007). Das’ approach reveals that the process of reoccupying the same spaces of daily life that once experienced disruption is peppered with ‘acts of self-creation’, meaning a renewal and revitalization of oneself, one’s social relationships and one’s relationship to the place. ‘Generative spaces for social remaking’ (Das 2007) can thus emerge that are centred on the ordinary activities necessary to keep life going, like providing food and shelter and taking care of children and elderly people.

Initiatives for ‘grassroots recovery’ can occasionally overlap with ‘interstitial initiatives’ that aim at reclaiming a form of autonomy from dominant economic and political logics and structures (Monticelli 2018), as in the case of the post-earthquake ecovillage of Pescomaggiore (L’Aquila, Italy) discussed by Tomassi and Forino (2019).⁴ However, as shown by Benadusi (2013; 2015), grassroots initiatives in contexts heavily exposed to international aid are systematically instrumentalized to support a rhetoric of resilience that reinforces deeply entrenched local power dynamics and the reproduction of conditions of inequality.

The resilience framework and its limitations

Today, ‘resilience’ is a key concept guiding not only the analysis of but also public interventions in recovery after disaster, and it has generated a vast body of literature (see Alexander 2013). It has prompted researchers to explore the inherent qualities and internal factors that affect a community’s ability to recover, or ‘bounce back’, from disaster and how to translate these factors into quantifiable indicators in order to help design more effective mitigation strategies (amongst such pioneering work, see Mileti 1999). Social capital and a variety of other ‘capitals’ (including community and economic capitals) and capacities (from improvisation to infrastructure resources) are thus identified as ‘elements of resilience’ that can be operationalized (Kendra *et al.* 2018). The concept of resilience and its use as a diagnostic and prognostic tool in recovery after disaster is also highly contested (see Aguirre and Best 2015; Tierney 2015). In particular, it has met with considerable criticism from researchers attempting to clarify its relationship to the logic of neoliberalism (Walker and Cooper 2011; Chandler and Reid 2016; Revet 2020). Efforts to operationalize resilience through a list of standardized indicators have to face the fact that responses to disaster are closely connected with socio-historical and cultural dimensions that are specific to each locality and that contribute to shaping the sense of what counts as a ‘good’ recovery.

Beyond the criticism of the implicit normative assumptions of the resilience metrics that have been developed with the aim of defining a universally valid model of resilience building, resilience has often been ‘co-opted’ as a justification put forward by neoliberal projects for withdrawing government support for universalistic welfare measures and, more generally, public infrastructure investments. Communities are then forced to compete for public and also

increasingly private funding to support resilience building, with the result that: ‘Resilience, paradoxically, is not for everyone, but for those who are best equipped to compete in the demanding *milieu* of government and philanthropic funding mechanisms’ (Kendra *et al.* 2018: 101). On a similar note, Benadusi (2013: 434) highlighted the fact that in post-disaster situations, actors confronted with international aid *dispositifs* have to appear ‘just resilient enough [...], but not so resilient as to tarnish the image of vulnerability still required to intercept aid’. In post-Chernobyl Ukraine (Petryna 2013), post-Fukushima Japan (Hasegawa 2013) and post-Hurricane Katrina New Orleans (Adams 2013), individuals had to compete in order to ‘prove’ that their victimized conditions justified state assistance or compensation and that they qualified for it by showing that they were learning to become ‘resilient’ as a community of (acknowledged) victims. All these cases show how the ‘social resilience’ framework (see Hall and Lamont 2013) promotes a specific normativity that is sustained by neoliberal policies and narratives and is based on individual and collective capacities to cope and ‘creatively’ adapt to unavoidable catastrophes. From this perspective, resilience has been defined as the new ‘social morphology’ of our societies, which are ‘insecure by design’ (Evans and Reid 2014).

However, it is important to distinguish between resilience as a governance tool, resilience as a justificatory argument that can be mobilized by a variety of actors in concrete situations and resilience as an analytical framework that can be used to approach the way in which societies respond to disruptions. In this latter case, resilience has the merit of drawing attention to the need for an interdisciplinary approach to the study of recovery after disasters that takes into account the systemic dimension of interwoven ecological, technical, socio-cultural and political factors at different scales. Indeed, the resilience framework invites us to develop an approach to disasters in which social dynamics are analyzed in their interdependences with

the specific environment in which the disaster occurs. From the perspective of resilience, disasters can be considered as ‘interactive phenomena of social and technical systems distributed over geographic space’ (Kendra *et al.* 2018: 104).

The implicit reference in the resilience framework to the mutually constitutive dynamics of systems and places invites us to include the dimension of *milieu* (see Chateauraynaud and Debaz 2021 – in this volume) in order to understand how ‘nested systems’ can produce ‘injurious outcomes that cannot be straightforwardly confined in time or space, nor adequately addressed with standard operating procedures and established modes of thought’ (Fortun *et al.* 2017: 1004). However, we believe that the technocratic reduction of resilience to a tool that can be mobilized by a larger form of neoliberal ‘governing through standards’ (Ponte *et al.* 2011) as well as the community-based focus that this framework implicitly supports and the social morphology it encourages profoundly hinder the potential of such a notion as a tool that can be used to explore the dynamics of post-disaster initiatives and the diversity of patterns towards social change.

The aim of this book is to clear the way for the development of an alternative perspective on researching recovery after disasters that is based on the socially, culturally, politically, ecologically and ethically informed notion of *repairing environments*. It consists in analyzing *how a variety of socio-technical, socio-ecological and socio-cultural repairing issues are defined and dealt with in arenas, ‘dispositifs’ and practices that together shape the possible paths of recovery after disaster.*

From resilience to the multiple meanings of the ‘repairing environments’ notion

The contributions assembled in this book show how the resilience discourse is displaced, reshaped, enhanced and challenged by introducing a ‘repairing’ perspective into researching recovery after disasters.

Before going any further, we need to clear up a possible misunderstanding. At the core of the notion of ‘repairing’ as discussed in this book is a partial distancing from the common understanding of ‘repairing’ as restoring a being, object, situation or environment that has been impaired to its original state. Our approach is based on considering ‘the repair’ as an ambivalent social phenomenon that is both transformative and aimed at maintaining a continuity with the past condition through transformation (see Attia 2018). Therefore, the effects of the repair will manifest in an undetermined way in an unforeseeable future with an unknown spatial scope. From this perspective, ‘repair’ is a notion that can be useful in exploring human communities’ relationships with their environment.

Disasters, in all their different forms, remind us of human interdependences with the material world and societies’ dependence on material infrastructures and ‘infrastructuring practices’ (Star 1999; Bowker and Star 1999; Edwards 2003). Moreover, major chemical and nuclear disasters have contributed at least since the 1960s to the emergence of a form of environmental reflexivity on the global dimension of the ecological crisis epitomized by the sociological ‘risk society’ category (Lagadec 1981; Amoore 2013; Amoore and de Goede 2008; Beck 1992) and, more recently, to the notion of ‘Anthropocene’ (Bonneuil and Fressoz 2017; Blok and Jensen 2019). This implies that it is increasingly hard to draw a clear line – if indeed this were ever possible – between what can be considered a natural environment and what can be considered a socially and culturally shaped environment (Latour 1993). In

addition, it has become even more difficult to address issues of social change in isolation from larger processes of ecological and technical transformations.

In contrast to the general propensity to speak in terms of an undifferentiated global environment, disaster situations force us to pay attention to ‘the activities, materialities, and concepts through which an environment is performed in always situated and contested ways’, which reveal ‘an array of environments, themselves heterogeneous and differently organized’ (Blok *et al.* 2016). In fact, disasters disrupt a variety of ecologies that shape environments, thus triggering a multiplicity of repairing processes that account for the emergence, or not, of new patterns of socio-ecological organization (see also Oliver-Smith 1998).

Consequently, this reference to environments points to the need to address the analysis of disaster recovery through a consideration of the variety of material ecologies that become visible as a result of their malfunctioning and the efforts to repair them (see also Frickel *et al.* 2009). With regard to the notion of ‘environments’, we would like to stress the importance of paying attention in the analysis of disaster recovery, on the one hand, to social phenomena as embedded in socio-ecosystems and, on the other, to their place-based nature as phenomena that are geographically located and shaped in a material ‘web of life’ that is culturally invested with meaning and value (Gieryn 2000).

By connecting disasters and environments, the objective of this book is to emphasize that disasters potentially reconfigure not only societies but also ontologies through the variety of processes of repairing that actors engage in to return to normalcy. Recent developments in the field of environmental law, like the creation of legal rights for rivers (O’Donnel and Talbot-Jones 2018), point to evolutions in this direction.

Furthermore, while the notion of recovery (both in its institutional and scientific conceptualizations) implicitly focuses on the physical-material dimension of disrupted environments at that *present* time and optimistically assumes that these environments can be restored (or at least recovered or made invisible), the repair perspective takes into account the causes of the disruption, those responsible for it and those suffering from or victimized by it. It thus takes seriously both the past and the present in its approach to (build) the future. Finally, it is our understanding that the notion of ‘repair’ points, much more so than the notion of ‘recovery’, to a process rather than a finality, which means that the very possibility that certain disaster situations or conditions are unrepairable (although individuals most often seek to repair them – as a preliminary condition for survival) is incorporated in it.

As discussed in the chapters of this volume, observing actual processes of recovery after disaster reveals the coexistence of a ‘multiplicity’ (Law and Mol 2002) of possible understandings of repairing that guide actors’ conduct as part of the recovery after a disaster.

Repairing, understood here as *asking for reparation*, can point to the righting of a wrong, typically through means of making amends to those who have been wronged. Thus, the juridical term ‘reparation’ performs an ‘accusatory function, invoking a kind of repair that entails identifying the actor who caused the damage in question, denouncing the formal injustice of damages suffered and determining corresponding faults, crimes, victims and perpetrators’ (Dodier 1995 – translated from French). In this case, the disaster is framed as a moral or juridical crisis requiring reparation through remuneration or other assistance to the party that has been wronged. This implies resorting to the legal or moral code and to the *dispositif* of the trial (Dodier and Barbot 2016). Legal procedure is, however, not always well

adapted to meeting the objectives implied in resolving moral questions. Feelings of injustice can persist when victims or their representatives contest the appropriateness or adequacy of the form of compensation made. The valuation and evaluation of damages to body, life and environment imply a series of complex and contentious processes that can bring about important transformations in legal systems (Fourcade 2011; Petryna 2013). Beyond monetary compensation, victims or their representatives can ask for symbolic forms of reparation, such as a request for an apology, especially from state actors (Mihai 2012), the importance of which can vary significantly according to the cultural context.

Depending on the nature of disasters and their destructive potential, these contentious processes can also reveal the power of industrial actors and practices of ‘ignorance production’ or of strategic (non)production and use of knowledge in the context of the evaluation of damages (Oreskes and Conway 2010; Jobin 2021 – in this volume). A variety of factors influence these reparation processes and their potential to trigger social change, including the existence of national liability mechanisms, juridical and environmental protection systems and the lobbying capacity of collective mobilizations.

During the recovery process, however, actors have to deal not only with a moral crisis but also with the re-establishment and then improvement of the functionalities of the various infrastructures (including the ecological, economic and technical infrastructures) that the disaster has disrupted. The focus of this *functional understanding of repairing* is not on the past and the identification of crimes but on the future and the discovery and anticipation of dysfunctions (Dodier 1995). ‘To repair’ means, in this sense, *to fix a systemic breakdown* so as to avoid its repetition. In this case too, law and regulations play an important role since they should guarantee, at least formally, the conditions for safety and the prevention of future

accidents. This implies the mobilization of specific devices such as technical protocols, ‘stress tests’, maintenance procedures, preparedness measures (see Keck 2021 – in this volume), ecological restoration programmes (including revegetation, habitat enhancement, remediation) and insurance or liability systems. Furthermore, such devices are increasingly being conceived and organized at an international level, especially in very high-risk sectors such as the nuclear sector (see Topçu 2021 – in this volume), where the cross-border nature of radioactive fallout has been a major concern since the Chernobyl accident.

These devices are intended to deal with technical issues, but they have a huge impact on the trajectories of recovery. They can be contested on technical grounds (controversies) as well as on the grounds of the social consequences of their design with regard to exclusion and injustice (conflicts). As Klein’s *Shock Doctrine* reminds us, the repairing of infrastructures can present not only an economic opportunity for interest groups but also a political opportunity to advance an alternative vision of how the society in question should function.

The technical fixing of infrastructures inevitably crosses over with the practices that actors engage in individually and collectively to maintain and repair their own environments, which is understood as the everyday relationships of taking care of people, objects, places and non-human beings. The reference here is to the notion of ‘repair’ as discussed by feminist scholars and activists in relation to the concept of *care*, which was defined by Fisher and Tronto (1990: 40) as:

a species activity that includes everything that we do to maintain, continue, and repair our “world” so that we can live in it as well as possible. That world includes

our bodies, our selves, and our environment, all of which we seek to interweave in a complex, life-sustaining web.

As Jackson argued when discussing his ‘broken world thinking’ perspective: ‘Care [...] reconnects the necessary work of maintenance with the forms of attachment that so often (but invisibly, at least to analysts) sustain it’ (2014: 232). Haraway (2016: 55) referred instead to ‘precarious times’ and advocated an intense human-nonhuman interplay to ‘renew the biodiverse powers of terra’ within the Chthulucene, which is:

made up of ongoing multispecies stories and practices of becoming-with in times that remain at stake, in precarious times, in which the world is not finished and the sky has not fallen – yet. We are at stake to each other. Unlike the dominant dramas of Anthropocene and Capitalocene discourse, human beings are not the only important actors in the Chthulucene, with all other beings able simply to react. The order is reknitted: human beings are with and of the Earth, and the biotic and abiotic powers of this Earth are the main story.

Repairing can thus also be understood as a focus on individual and collective practices of reflexively maintaining one’s own world in material, multispecies, experiential and emotional terms. As an expression of care, repair after disasters involves engaging in maintaining, as far as possible, the ordinary activities and experiences (such as providing food, sleeping, taking care of children and spending time with friends and family) that are necessary to support the texture of everyday life. Disasters reveal the importance of such ordinary practices for the preservation of the ‘human life form’ (Lovell *et al.* 2013).

This sense of repairing thus refers to the embodied and ‘emplaced’ (Pink 2011) experience of the catastrophe and points to forms of self-organization that emerge as part of the response to the disaster and recovery process. These practices respond to the need to recreate, at the levels of meaning, attachments and everyday life, close relationships between human beings, on the one hand, and between human beings, other living beings and places, on the other. These repair practices rely on the mobilization of a form of ‘negative capability’, which is defined as the ability to maintain the continuity of everyday life in the face of its absence or loss of meaning (Lanzara 1993). The scope of such repair practices and their contribution to recovery can be understood only through taking into account the importance of the ‘familiar environment’ as a space in which individual capacities are rooted (Breviglieri 2012). In order to grasp repairing at the level of everyday life, ethnography is therefore a fundamental complement to other methodologies of inquiry.

With this third understanding of repair, our aim is to bring to disaster studies recent developments that have emerged in the field of repair studies (see Graziano and Trogal 2019). Repair studies focuses on the activities of ‘maintaining the world’ as a potential ‘site of altering’, that is, as a potential site of ‘contingent political change without relying upon the myth of ex-nihilo creation’ (Graziano and Trogal 2019: 214). Far removed from the idea of re-establishing the *status quo*, repairing as caring thus refers to the work of maintaining interdependences as a potentially transformative process. Repairing practices can therefore be linked to the construction of a collective demand and can sustain struggles for reparation. However, analyses of the processes of recovery after major nuclear accidents (like Chernobyl and Fukushima) have revealed the instrumentalization of this kind of ordinary repairing through the resilience narrative in order to mask conditions of irreparability and to prove nuclear risk is socially acceptable, thus contributing to the maintenance of the *status quo*. As

discussed by Ribault (2019: 4) in the case of resilience narratives after the Fukushima catastrophe:

As individuals are called upon to act upon themselves hygienically to measure and mitigate radiation exposure after catastrophic levels of contamination, the proposed responses consist in shifting the target for resilience from biology to individual psychology and to society. Resilience is thus operating as a governing technology – more specifically as a technology of consent – that displaces some problems – here the irreversible biological effects induced by radiation exposure – by offering substitute problems such as empowering individual [sic] and rebuilding communities.

In the same way, ‘nuclearists’ in Chernobyl and Fukushima have been promoting a ‘radiological culture’ (*e.g.* the use of a Geiger counter on a daily basis to govern everyday activities in such a way as to reduce exposure to radiation) aimed at turning radioactivity into an ‘ordinary’ feature of the everyday life experience, *de facto* producing a form of collective ignorance (Topçu 2013; Kimura 2017).

In this case, the human capacity for ‘maintaining one’s own world’ is instrumentalized in order to sustain a vision of repairing that is exclusively focused on the recovery of systemic functionalities. This vision of functional repairing imposes a technocratic, non-negotiable reconfiguration of ordinary human-environment interdependences that are oriented towards future technoscientific achievements. As Ribault showed in the case of Fukushima, these achievements can include ‘robotic, agronomic [...], biological, and medical experiments’ as well as ‘architectural and urban planning experiments including land deregulation, smart

cities, and other smart communities projects' (2019: 6). Ribault's (2019) notion of the 'incantatory' mechanism that is sustained by resilience narratives contributes, in the case of Fukushima, to silencing present experiences of irreparable losses – including the invisibility of remediation workers – and to hampering collective efforts to transform these harms into damages in need of reparation.

Repairing environments: the contributions

The volume contains 10 contributions (and a concluding chapter) from scholars of diverse disciplinary backgrounds, including sociology, criminology, anthropology, history and philosophy. The majority of the contributions are based on case studies located in different parts of the world, such as France, Spain, Taiwan, Hong Kong, Brazil and Japan. The contributions are organized into three sections, which focus on (1) the challenges of repairing slow and chronic disasters, (2) an analysis of processes of repairing as an expression of collective efforts to remake liveable worlds and (3) the role of law and judicial processes in repairing environmental harms. Of course, there are common theoretical and analytical concerns running through the three sections, which reflects the integration of these perspectives on recovery from the vantage point of repairing.

Collectively, the contributions seek to enhance our knowledge and understanding of the ways in which the different repair logics interact in *dispositifs*, practices and arenas, where the interplay of normative expectations around recovery and the struggles over sense-making in relation to disaster situations can be analyzed as part of larger interest-based struggles within a power-laden framework. They also raise relevant issues for critically assessing the heuristic potential of the repairing perspective and address broader theoretical questions, especially

concerning the contribution of the social sciences to the analysis of transformative dynamics of complex systems.

The first section opens with Paul Jobin's discussion of the 'economy of compensation' and struggle for reparation in the case of Formosa Plastics in Taiwan. The author explores the reparation issues in the case of chronic pollution caused by the activities of a major petrochemical industry. In particular, Jobin highlights how monetary compensation for the damage is consolidating a kind of local economy that ends up legitimizing polluting activities. At the same time, his research shows the efforts of the victims, who are gathered together in a class action, to make monetary compensation an opportunity to denounce the polluting practices of industry. These collective mobilization experiences allow the participants to develop forms of agency that are worthy of consideration for their potential to ultimately translate into concrete forms of environmental repair.

In Chapter 2, Sezin Topçu analyzes the strategies, doctrines and tools that nuclear states and agencies have elaborated to deal with post-accident recovery. Focusing on the problem of contaminated land, she explores how plans were made for the land to be managed historically and at an international level and how it was or is effectively managed in regions victimized by the Chernobyl and Fukushima accidents. She analyzes the contexts, policies and discourses that, instead of tackling the contaminated zones as a social and political problem, led to the formulation of the problem in terms of the 'technical' modalities of evacuation. In particular, her contribution sheds light on three managerial strategies of recovery (geological, biological and psycho-social) that conflict with the multiple forms of reparation demanded or trialled by activists and victim groups.

This section on slow disasters ends with Daniel Delatin Rodrigues's contribution on attempts to repair the ecological disaster caused by the industrialization of agriculture in the Brazilian region of Pontal do Paranapanema. This disaster resulted from a *de facto* alliance between local elite landowner groups and global modernization processes. The ecological reparation promoted by an agroecology project, which is a collaboration between the *Sem Terra* movement and local university technicians and academics, cannot therefore be separated from the larger social goal to propose a model of agricultural organization that is more respectful of social and ecological justice. However, this case study shows the difficulties of implementing such a project when most farmers are still totally dependent on globalized economic circuits. These conditions appear quite unfavourable in terms of the experiments that are necessary in order to find effective socio-ecological reparative *agencements* between humans and non-humans.

Section II begins with Santiago Gorostiza and Marco Armiero's historical investigation of the long term consequences of the catastrophic collapse of the Vega de Tera dam in Spain. At around midnight on 9 January 1959, the Vega de Tera dam broke, releasing approximately 8 million cubic metres of water. It destroyed the Spanish town of Ribadelago and killed 144 people. To this day, it remains the worst dam-related failure in the last two centuries of Spanish history. In the aftermath of the disaster, the efforts of the Francoist dictatorship prioritized anticipating similar disasters and avoiding a repetition rather than identifying who was responsible or repairing the victims. In this context, memory emerged as a strategic tool for the recovery of the survivors' individual and collective agency as part of a wider process to achieve social repair. The authors' analysis of the aftermath of the disaster in the long term reveals that the survivors fought to achieve both a judicial and a narrative reparation, which were intertwined.

The next contribution by Frédéric Keck explores a topic of growing centrality in a context of increasingly globalized disasters, which is the processes of repairing following a pandemic. Focusing on pandemic preparedness in Hong Kong in the aftermath of the 1997 bird flu outbreak, Keck shows that this influenza pandemic was an event that Hong Kong had been preparing for through sentinels, simulation and stockpiling but that it was also a disaster that had already happened in the mass culling of poultry to eradicate the reservoir of the disease. He explores the disjunction between a disaster that actually affected this bird species and a disaster that could have potentially affected the human species by describing how the mass death of poultry in Hong Kong was perceived as a signal of human extinction. This multispecies approach questions the nature of a community that recovers from a disaster. In particular, Keck discusses how the decision to cull or cure the birds can be understood as a signal of what could happen to humans. He examines the grounds for justifying this decision by looking at the fabric of memory and heritage in the narrative of a collective disaster as a traumatic event.

Following on from this multispecies questioning, Line Marie Thorsen discusses how groups of artists in Japan have been turning towards natural farming and permaculture practices as a way of grappling with environmental and ecological issues after the triple disaster of 3.11, that is the earthquake, tsunami and Fukushima Daiichi nuclear powerplant meltdown of 11 March 2011. The author argues that agricultural artists have a particular potential for reworking aesthetic imaginaries both of life after and of life combatting complex disastrous events through reworking and mending the soil to farm without the use of risky energy forms.

The section ends with Francis Chateauraynaud and Josquin Debaz's contribution on the consequences of the Mariana dam disaster, also known as the Samarco dam disaster. It occurred on 5 November 2015, when a tailings dam at the iron ore mine in the Samarco Mariana mining complex near Mariana, in the Brazilian state of Minas Gerais, suffered a catastrophic failure. Adopting a pragmatist approach to study the long-running critical processes in relation to the Mariana catastrophe, the authors examine how different actors evaluated the multiple ecological, health and socio-economic consequences of the disaster and how they engaged in a variety of processes of reparation. These processes tackled a wide range of conflicting issues related to extractivism and environmental justice, including scientific controversies around the extension of the damage to the coral reef of the Abrolhos Islands. This contribution aims at exploring how actors deal with the question of the (ir)reversibility of damage, how they identify, represent and argue for the possibility, or impossibility, of repairing, restoring and compensating and how these processes shape the dynamics of reconstructing liveable worlds.

The final section on the role of law in repairing environmental harms begins with Lorenzo Natali and Matthew Hall's contribution on green criminology and the case for environmental restorative justice. The chapter approaches the notion of repairing from the manifold perspective of green criminology, presenting some of the theoretical frameworks that appear best suited to support the interdisciplinary debate on recovery after disaster and highlighting the importance of paying attention to the perspectives of human and non-human victims. The authors make the case for restorative justice and mediation-based approaches as a means to provide alternative or parallel justice mechanisms for victims of environmental crimes and harms. In so doing, they highlight innovative directions for future research that might contribute to collectively devise new ways of repairing environmental harm.

In Chapter 9, Sandrine Revet explores, from an anthropological perspective, the possibilities and limitations of a specific judicial *dispositif* as a way to repair that goes beyond the accusatory understanding of reparation. In particular, she analyzes a specific event in the criminal trials that took place after Storm Xynthia, which caused 29 deaths and extensive destruction in the French municipality of La Faute-sur-Mer in 2010. During the first trial, the court transported the proceedings to the scene of the disaster and organized a walk through the site that had been destroyed by the flood. Based on an ethnographic observation, Revet analyzes the walk not just as a judicial tool of reenactment but also as a means to commemorate the disaster and as a ritual of making amends. She suggests that the notion of reparation in a criminal trial can encompass other dimensions than a mere accusatory one, depending on how the participants make use of the judicial *dispositif*.

The section ends with Janine Barbot and Nicolas Dodier's contribution, which introduces the notion of the 'ecology of reparation *dispositifs*' to address the reparation of a health catastrophe. The authors define as 'normative work' the evaluations victims have to carry out with regard to both legal *dispositifs* (civil or criminal) and other reparation *dispositifs* (associative, compensatory, medical, media-based, etc.) that contribute to the local ecology of repairing in each disaster. Through the conflicting evaluations that this normative work reveals, victims explicitly show what they value in one judicial strategy over another. These explanations make it possible for the victims to reconstruct their experiences of the different procedures and to analyze how the judicial reparation processes bring them together or divide them and how the strategies they implement fit more broadly into the ecology of the reparation *dispositifs* that they face. By comparing the ways in which different countries dealt with the same disaster (the growth hormone health disaster), the authors suggest the existence

of contrasting national reparation trajectories in relation to the existing ecologies of *dispositifs*. This contribution extends the approach proposed in the book to the case of health disasters by showing its heuristic potential beyond the analysis of environmental damage that is at the heart of the other chapters. Through the notion of ecologies of *dispositifs*, the authors also identify a promising path for the development of systematic diachronic and synchronic comparative analyses of recovery trajectories.

In the concluding chapter, we enrich the discussion on the repair perspective, between theory and practice, insisting on the importance of taking into account a plurality not only of normative expectations but also of forms of knowledge and mechanisms of exclusion. In addition, we emphasize the need to highlight the systemic causes of disasters while paying attention to the experience of actors directly affected and their struggles to turn recovery into a process of designing liveable worlds.

If we acknowledge that our book does not outline a ‘theory of recovery’, we think however that it provides a theoretically informed approach to the study of socio-ecological change that takes into account the interaction between the socio-technical, environmental and cultural dimensions. Finally, as the contributions show, the standpoint of repair adopted in this volume is less normative-laden and politically connoted than resilience and more alert to the contentious nature of recovery processes. Our hope is that in articulating a research agenda centred on the notion of repair, this book will contribute to what Fortun *et al.* (2017: 1018) hoped would progressively become a shared objective in the community of disaster research, namely the development of ‘methodologically and theoretically inventive, empirically rich’ ways to study disasters that pay attention ‘to the acute problems of representations that beset disaster (and disaster studies)’.

References

- Adams, V. (2013) *Markets of sorrow, labors of faith: New Orleans in the wake of Katrina*, Durham, NC: Duke University Press.
- Aguirre, B.E. and Best, E. (2015) 'How not to learn: Resilience in the study of disaster', in H. Egner, M. Schorch and M. Voss (eds) *Learning and calamities: Practice, interpretations, patterns*, London and New York: Routledge.
- Aijazi, O. (2015) 'Theorizing a Social Repair Orientation to Disaster Recovery: Developing Insights for Disaster Recovery Policy and Programming', *Global Social Welfare*, 2: 15–28. <<https://doi.org/10.1007/s40609-014-0013-x>>.
- Alexander, D. E. (2013) 'Resilience and disaster risk reduction: An etymological journey', *Natural Hazards and Earth System Sciences*, 13(11): 2707–2716.
- Allen, B. (2018) 'Strongly Participatory Science and Knowledge Justice in an Environmentally Contested Region', *Science, Technology, & Human Values*, 43(6): 947–971.
- Amoore, L. (2013) *The Politics of Possibility: Risk and Security beyond Probability*, Durham, NC: Duke University Press.
- Amoore, L. and de Goede, M. (2008) *Risk and the War on Terror*, London: Routledge.
- Attia, K. (2018) 'Open Your Eyes!', *Third Text*, 32(1), 16–31.
- Barbot, J. and Dodier, N. (2021 – in this volume) 'Victims and the Ecologies of Reparation *Dispositifs* in the Contaminated Growth Hormone Case: Comparative Perspectives on Recovery after a Health Disaster', in L. Centemeri, S. Topçu and J.P. Burgess (eds) *Repairing Environments in Post-Disaster Situations. Experiences, Mobilizations, Frictions*, London: Routledge.

- Barca, S. (2014) 'Telling the Right Story: Environmental Violence and Liberation Narratives', *Environment and History*, 20(4): 535–46.
- Beck, U. (1992) *Risk Society: Towards a New Modernity*, London and New York: Sage.
- Benadusi, M. (2013) 'The Two-Faced Janus of Disaster Management: Still Vulnerable yet already Resilient', *South East Asia Research*, 21(3): 419–438.
- Benadusi, M. (2015) Cultivating Communities after Disaster: A Whirlwind of Generosity on the Coasts of Sri Lanka', in S. Revet and J. Langumier (eds) *Governing Disasters: Beyond Risk Culture*, London: Palgrave Macmillan.
- Berke, P.R., Kartez, J., and Wenger, D. (1993) 'Recovery after disaster: achieving sustainable development, mitigation and equity', *Disasters*, 17(2): 93–109.
- Blok, A. and Jensen, C.B. (2019) 'The Anthropocene event in social theory: On ways of problematizing nonhuman materiality differently', *The Sociological Review*, 67(6): 1195–1211.
- Blok, A., Nakazora, M. and Winthereik, B.R. (2016) 'Infrastructuring Environments', *Science as Culture*, 25(1): 1–22.
- Bonneuil, C. and Fressoz, J-B. (2017) *The Shock of the Anthropocene. The World, History and Us*, London: Verso.
- Bowker, G.C. and Star, S.L. (1999) *Sorting Things Out: Classification and Its Consequences*, Cambridge, MA: MIT Press.
- Breviglieri, M. (2012) 'L'espace habité que réclame l'assurance intime de pouvoir: Un essai d'approfondissement sociologique de l'anthropologie capacitaire de Paul Ricoeur', *Études Ricoeuriennes / Ricoeur Studies*, 3(1): 34–52.
- Cabane, L. and Revet, S. (2015) 'La cause des catastrophes. Concurrences scientifiques et actions politiques dans un monde transnational', *Politix*, 111(3): 47–67.

- Cefaï, D. (2016) 'Publics, problèmes publics, arènes publiques... Que nous apprend le pragmatisme?', *Questions de communication*, 30: 25–64.
- Cefaï, D. (2002) 'Qu'est-ce qu'une arène publique? Quelques pistes pour une approche pragmatiste', in D. Cefaï and I. Joseph (eds) *L'Héritage du pragmatisme*, La Tour d'Aigues: Éd. de l'Aube, 51–82.
- Centemeri, L. (2015) 'Investigating the "Discrete Memory" of the Seveso Disaster in Italy', in S. Revet and J. Langumier (eds) *Governing Disasters. Beyond Risk Culture*, London: Palgrave Macmillan.
- Centemeri, L. (2010) 'The Seveso Disaster's legacy', in M. Armiero and M. Hall (eds) *Nature and History in Modern Italy*, Athens, OH: Ohio University Press & Swallow Press.
- Chandler, D. and Reid, J. (2016) *The Neoliberal Subject: Resilience, Adaptation and Vulnerability*, London: Routledge.
- Chateauraynaud, F. (2016) 'Pragmatique des transformations et sociologie des controverses. Les logiques d'enquête face au temps long des processus', in Y. Cohen and F. Chateauraynaud (eds) *Histoires pragmatiques*, Paris: EHESS, 349–385.
- Chateauraynaud, F. and Debaz, J. (2021 – in this volume) 'Plurality of Temporalities, Complexity and Contingency in Repairing after Dam Failures in Minas Gerais', in L. Centemeri, S. Topçu and J.P. Burgess (eds) *Repairing Environments in Post-Disaster Situations. Experiences, Mobilizations, Frictions*, London: Routledge.
- Choi, V.Y. (2015) 'Anticipatory States: Tsunami, War and Insecurity in Sri Lanka', *Cultural Anthropology*, 30(2): 286–389.
- Dahlberg, R., Rubin, O. and Vendelø, M.T. (eds) (2016) *Disaster research: Multidisciplinary and international perspectives*, London and New York: Routledge.
- Das, V. (2007) *Life and worlds: violence and the descent into the ordinary*, Berkeley: University of California Press.

- Das, V., Kleinman, A., Lock, M., Ramphele, M. and Reynolds, P. (eds) (2001) *Remaking a World: Violence, Social Suffering, and Recovery*, Berkeley: University of California Press.
- Delatin Rodrigues, D. (2021 – in this volume) ‘After the (Green) Revolution Comes (Ecological) Restoration: Scientists and Peasants in Pontal do Paranapanema, Brazil’, in L. Centemeri, S. Topçu and J.P. Burgess (eds) *Repairing Environments in Post-Disaster Situations. Experiences, Mobilizations, Frictions*, London: Routledge.
- Dodier, N. (2015) ‘Postscript: Thinking (by way of) Disaster’ in S. Revet and J. Langumier (eds) *Governing Disasters: Beyond Risk Culture*, London: Palgrave Macmillan.
- Dodier, N. (1999) ‘L’espace public de la recherche médicale. Autour de l’affaire de la ciclosporine’, *Réseaux. Communication, technologie, société*, 95: 107–154.
- Dodier, N. (1995) *Les hommes et les machines. La conscience collective dans les sociétés technicisées*, Paris: Métailié.
- Dodier, N. and Barbot, J. (2016) ‘The force of *dispositifs*’, *Annales. Histoire et Sciences Sociales* (English edition), 71(2): 291–317.
- Doucet, A. (2018) ‘Shorelines, seashells, and seeds: Feminist epistemologies, ecological thinking, and relational ontologies’, in F. Dépelteau (ed.) *The palgrave handbook of relational sociology*, Cham, Switzerland: Palgrave Macmillan.
- Dowty, R.A. and Allen, B.L. (eds) *Dynamics of Disaster: Lessons on Risk, Response and Recovery*, London: Earthscan.
- Edwards, P.N. (2003) ‘Infrastructure and modernity: force, time and social organization in the history of sociotechnical systems’, in T.J. Misa, P. Brey and A. Feenberg (eds) *Modernity and Technology*, Cambridge, MA: The MIT Press: 185–225.
- Evans, B. and Reid, J. (2014) *Resilient life. The art of living dangerously*, Oxford, England: Polity Press.

- Fisher, B. and Tronto, J.C. (1990) 'Toward a feminist theory of caring', in E. Abel and M. Nelson (eds) *Circles of Care: Work and Identity in Women's Lives*, Albany: State University of New York Press.
- Fletcher, R. (2012) 'Capitalizing on chaos: Climate change and disaster capitalism', *Ephemera*, 12(1/2): 97–112.
- Fortun, K. (2001) *Advocacy after Bhopal: Environmentalism, Disaster, New Global Orders*, Chicago: University of Chicago Press.
- Fortun, K., Knowles, S.G., Choi, V., Jobin, P., Matsumoto, M., de la Torre III, P., Liboiron, M. and Murillo, L.F.R. (2017) 'Researching Disaster from an STS perspective', in U. Felt, R. Fouche, C.A. Miller and L. Smith-Doerr (eds) *The Handbook of Science and Technology Studies*, Fourth edition, Cambridge, MA: The MIT Press, 1003–1028.
- Fourcade, M. (2011) 'Cents and sensibility: Economic valuation and the nature of "Nature"', *American Journal of Sociology*, 116(6): 1721–1777.
- Frickel, S. (2008) 'On Missing New Orleans: Lost Knowledge and Knowledge Gaps in an Urban Hazardscape', *Environmental History*, 13(4): 643–650.
- Frickel, S., Campanella, R. and Vincent, M.B. (2009) 'Mapping Knowledge investments in the aftermath of Hurricane Katrina: a new approach for assessing regulatory agency responses to environmental disaster', *Environmental Science & Policy*, 12: 119–133.
- Gieryn, T. (2000) 'A Space for Place in Sociology', *Annual Review of Sociology*, 26: 463–495.
- Go, J. (2016) *Postcolonial Thought and Social Theory*, Oxford and New York: Oxford University Press.
- Gorostiza, S. and Armiero, M. (2021 – in this volume) 'Repairing as Struggle for Narrative Justice. The Dam Failure of Vega de Tera, Spain (1959-2019)', in L. Centemeri, S.

- Topçu and J.P. Burgess (eds) *Repairing Environments in Post-Disaster Situations. Experiences, Mobilizations, Frictions*, London: Routledge.
- Graziano, V. and Trogal, K. (2019) 'Repair Matters', in *Ephemera. Theory and Politics in Organization*, 19(2): 203–227.
- Gunewardena, N., and Schuller, M. (eds) (2008) *Capitalizing on Catastrophe. Neoliberal Strategies in Disaster Reconstruction*, Lanham, New York, Toronto, Plymouth: AltaMira Press.
- Hall, P.A. and Lamont, M. (2013) *Social resilience in the Neoliberal Era*, Cambridge, MA: Cambridge University Press.
- Haraway, D.J. (2016) *Staying with the Trouble: Making Kin in the Chthulucene*, Durham, NC: Duke University Press.
- Hasegawa, R. (2013) 'Disaster Evacuation from Japan's 2011 Tsunami Disaster and the Fukushima Nuclear Accident', IDDRI Study, n°5.
<https://www.iddri.org/sites/default/files/import/publications/study0513_rh_devast-report.pdf>.
- Hennion, A. (2004) 'Une sociologie des attachements. D'une sociologie de la culture à une pragmatique de l'amateur', *Sociétés*, 85(3): 9–24.
- Hilgartner, S., and Bosk, C.L. (1988) 'The Rise and Fall of Social Problems: A Public Arenas Model', *American Journal of Sociology*, 94(1): 53–78.
- Jackson, S. J. (2014) 'Rethinking repair', in T. Gillespie, P. Boczkowski and K. Foot (eds) *Media technologies: Essays on communication, materiality and society*, Cambridge, MA: MIT Press.
- Jobin, P. (2021 – in this volume) 'The Economy of Compensation and the Struggle for Reparation: The case of Formosa Plastics in Taiwan', in L. Centemeri, S. Topçu and

- J.P. Burgess (eds) *Repairing Environments in Post-Disaster Situations. Experiences, Mobilizations, Frictions*, London: Routledge.
- Keck, F. (2021 – in this volume) ‘Preparing for Future Pandemics and Repairing Vulnerable Environments: Consequences of the 1997 Bird Flu Outbreak in Hong Kong’, in L. Centemeri, S. Topçu and J.P. Burgess (eds) *Repairing Environments in Post-Disaster Situations. Experiences, Mobilizations, Frictions*, London: Routledge.
- Kendra, J.M., Clay, L.A., and Gill, K.B. (2018) ‘Resilience and disasters’, in H. Rodríguez, W. Donner and J.E. Trainor (eds) *Handbook of Disaster Research*, Second Edition, New York: Springer.
- Kimura, A. H. (2017) ‘Fukushima ETHOS: Post-Disaster Risk Communication, Affect, and Shifting Risks’, *Science as Culture*, 27(1): 98–117.
- Klein, N. (2007) *The Shock Doctrine: The Rise of Disaster Capitalism*, New York: Metropolitan Books.
- Knowles, S.G. (2014) ‘Learning from Disaster? The History of Technology and the Future of Disaster Research’, *Technology and Culture*, 55(4): 773–784.
- Kreps, G.A. and Drabek, T.E. (1996) ‘Disasters Are Non-Routine Social Problems’, *International Journal of Mass Emergencies and Disasters*, 14: 129–153.
- Lagadec, P. (1981) *La Civilisation du risque*, Paris: Seuil.
- Lakoff, A. (2017) *Unprepared. Global health in a time of emergency*, Oakland, CA: University of California Press.
- Lanzara, G.F. (1993) *Capacità negativa: competenza progettuale e modelli di intervento nelle organizzazioni*, Bologna: Il Mulino.
- Latour, B. (1993) *We were never Modern*, Cambridge, MA: Harvard University Press.
- Law, J. and Mol, A. (2002) (eds) *Complexities: Social Studies of Knowledge Practices*, Durham, NC: Duke University Press.

- Lovell, M., Pandolfo, S., Das V., and Laugier, S. (2013) *Face aux désastres. Une conversation à quatre voix sur la folie, le care et les grandes détresses collectives*, Paris: Editions d'Ithaque.
- Mihai, M. (2012) 'When the State Says "Sorry": State Apologies as Exemplary Political Judgments', *The Journal of Political Philosophy*, 21(2): 200–220.
- Mileti, D. (1999) *Disasters by Design: A Reassessment of Natural Hazards in the United States*, Washington, DC: Joseph Henry Press.
- Monticelli, L. (2018) 'Embodying Alternatives to Capitalism in the 21st Century', *tripleC: Communication, Capitalism & Critique*, 16(2): 501–517.
- Natali, L. and Hall, M. (2021 – in this volume) 'A Green Criminological Approach to Environmental Victimisation and Reparation. A Case for Environmental Restorative Justice', in L. Centemeri, S. Topçu and J.P. Burgess (eds) *Repairing Environments in Post-Disaster Situations. Experiences, Mobilizations, Frictions*, London: Routledge.
- Nixon, R. (2011) *Slow Violence and the Environmentalism of the Poor*, Cambridge and Oxford: Oxford University Press.
- O'Donnell, E.L. and Talbot-Jones, J. (2018) 'Creating legal rights for rivers: lessons from Australia, New Zealand, and India', *Ecology and Society*, 23(1).
<<https://doi.org/10.5751/ES-09854-230107>>.
- Oliver-Smith, A. (1986) *The Martyred City: Death and Rebirth in the Peruvian Andes*, Prospect Heights, IL: Waveland.
- Oliver-Smith, A. (1998) 'Global Changes and the Definition of Disaster', in E.L. Quarantelli (ed.) *What is a disaster? A dozen perspectives on the question*, London and New York: Routledge.
- Oliver-Smith, A. and Hoffman, S. (eds) (1999) *The Angry Earth: Disaster in Anthropological Perspective*, Abingdon and New York: Routledge.

- Oreskes, N. and Conway, E. (2015) *Merchants of doubt. How a handful of scientists obscured the truth on issues from tobacco smoke to global warming*, New York: Bloomsbury Press.
- Passerini, E. (2000) 'Disasters as agents of social change in recovery and reconstruction', *Natural Hazards Review*, 1(2): 67–72.
- Perry, R.W. (2018) 'Defining Disaster: An Evolving Concept', in H. Rodríguez, W. Donner and J.E. Trainor (eds.) *Handbook of Disaster Research*, Second edition, New York: Springer.
- Petryna, A. (2013) 'How Did They Survive?' in Petryna, A. *Life Exposed: Biological Citizens after Chernobyl*, Tenth anniversary edition, Princeton, NJ: Princeton University Press.
- Pink, S. (2011) 'From embodiment to emplacement: re-thinking competing bodies, senses and spatialities', *Sport, Education and Society*, 16(3): 343–355.
- Ponte, S., Gibbon, P. and Vestergaard, J. (eds) (2011) *Governing through Standards: Origins, Drivers and Limitations*, Basingstoke, Palgrave Macmillan.
- Revet, S. (2020) *Disasterland. An Ethnography of the International Disaster Community*, London: Palgrave MacMillan.
- Revet, S. (2021 – in this volume) 'Reenact, Commemorate and Make Amends after Storm Xynthia Through a Judicial *Dispositif*', in L. Centemeri, S. Topçu and J.P. Burgess (eds) *Repairing Environments in Post-Disaster Situations. Experiences, Mobilizations, Frictions*, London: Routledge.
- Rodríguez, H., Donner, W. and Trainor, J.E. (eds) (2018) *Handbook of Disaster Research*, Second Edition, New York: Springer.
- Quarantelli, E.L. (1999) 'The Disaster Recovery Process: What We Know and Do Not Know From Research', Newark: University of Delaware Disaster Research Centre.

- Quéré, L. and Terzi, C. (2014) 'Did you say Pragmatic? Luc Boltanski's Sociology from a Pragmatist Perspective', in S. Susen and B. Turner (eds) *The Spirit of Luc Boltanski: Essays on the Pragmatic Sociology of Critique*, London and New York: Anthem Press.
- Revet, S. and Langumier, J. (eds) (2015) *Governing Disasters: Beyond Risk Culture*, London: Palgrave Macmillan.
- Ribault, T. (2019) 'Resilience in Fukushima: Contribution to a Political Economy of Consent', *Alternatives: Global, Local, Political*, 44(2-4): 94–118.
- Schlosberg, D. (2007) *Defining Environmental Justice: Theories, Movements, and Nature*, New York: Oxford University Press.
- Schuller, M., and Maldonado, J.K. (2016) 'Disaster capitalism', *Annals of Anthropological Practice*, 40(1): 61–72.
- Sewell, W. (1996) 'Historical Events as Transformations of Structure: Inventing Revolution at the Bastille', *Theory and Society*, 25(6): 841–881.
- Star, S.L. (1999) 'The ethnography of infrastructure', *American Behavioral Scientist*, 43(3): 377–391.
- Szyborska, W. (2001) *Miracle Fair: Selected Poems of Wisława Szymborska*, trans. Joanna Trzeciak, New York: W.W. Norton & Company.
- Thévenot, L. (2007) 'The plurality of cognitive formats and engagements: Moving between the familiar and the public', *European Journal of Social Theory*, 10(3): 409–423.
- Thorsen, L.M. (2021 – in this volume) 'Broken Techno-Ecological Systems and Art as Reparative Gestures', in L. Centemeri, S. Topçu and J.P. Burgess (eds) *Repairing Environments in Post-Disaster Situations. Experiences, Mobilizations, Frictions*, London: Routledge.
- Tierney, K.J. (2015) 'Resilience and the neoliberal project: Discourses, critiques, practices – and Katrina', *American Behavioral Scientist*, 59(10): 1327–1342.

- Tierney, K.J. (2007) 'From the Margins to the Mainstream? Disaster Research at the Crossroads', *Annual Review of Sociology*, 33(1): 503–25.
- Tierney, K., and Oliver-Smith, A. (2012) 'Social Dimensions of Disaster Recovery', *International Journal of Mass Emergencies and Disasters*, 30(2), 123–146.
- Tomassi, I. and Forino, G. (2019) 'The Ecovillage of Pescomaggiore (L'Aquila): Birth and death of a self-determined post-disaster community (2009-2014)', *Disaster Prevention and Management: An International Journal*. <<https://doi.org/10.1108/DPM-09-2018-0305>>.
- Topçu, S. (2013) 'Chernobyl Empowerment? Exporting Participatory Governance to Contaminated Territories', in S. Boudia and N. Jas (eds) *Toxicants, Health and Regulation since 1945*, London: Routledge.
- Topçu, S. (2021 – in this volume) 'Repairing the Ir-repairable: 'Geo-biological' Recovery of Environments After a Nuclear Disaster', in L. Centemeri, S. Topçu and J.P. Burgess (eds) *Repairing Environments in Post-Disaster Situations. Experiences, Mobilizations, Frictions*, London: Routledge.
- Tsing, A.L. (2005) *Friction: An Ethnography of Global Connections*, Princeton, NJ: Princeton University Press.
- Twigg, J., Lovell, E., Schofield, H., Morel, L.M., Flinn, B., Sargeant, S., Finlayson, A., Dijkstra, T., Stephenson, V., Albuerne, A., Rossetto, T. and D'Ayala, D. (2017) 'Self-recovery from disasters. An interdisciplinary perspective', Working Paper No. 523, Overseas Development Institute, London.
- Walker, J. and Cooper, M. (2011) 'Genealogies of resilience: from systems ecology to the political economy of crisis adaptation', *Security Dialogue*, 2(42): 143–60.
- Weidner, J.S. (2009) 'Review of disaster recovery', *Journal of Homeland Security and Emergency Management*, 6(1), 1–2.

Wisner, B. (2009) 'The Grocer's Daughter and the Men in Suits: Who Exactly Capitalizes on Catastrophe? And Why the Question Matters', *Capitalism Nature Socialism*, 20(3): 104–112.

¹ For a historical reconstruction see Tierney (2007), Cabane and Revet (2015), Dahlberg *et al.* (2016), Fortun *et al.* (2017).

² As a consequence, there has been less research conducted on mitigation and recovery after disaster than on preparedness and response. This focus on preparedness and response has not necessarily been accompanied by practical or political actions. In the management of flu epidemics for instance, regimes of preparedness and unpreparedness co-exist or operate in a complementary way (Lakoff 2017).

³ *Dispositifs* are conceived here as 'a prepared concatenation of sequences, intended to qualify or transform a state of affairs through the medium of an assemblage of material or language elements' (Dodier and Barbot 2016: 301).

⁴ A research field that has recently emerged in disaster studies is that of 'self-recovery', which is meant to provide tools to support the process whereby disaster-affected households repair, build or rebuild their shelters either themselves or with the use of local builders while trying to avoid some of the pitfalls that have emerged in the actual practice of resilience-building initiatives (see Twigg *et al.* 2017).