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Disaster memory: a driver of collective resilience?

Psychosocial perspectives on resilience in Réunion

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Résumé

Cet article interroge la mémoire des catastrophes comme levier de résilience collective dans le contexte des catastrophes naturelles. La mémoire des catastrophes peut-elle favoriser la résilience et à quelles conditions ? Le travail de terrain s'inscrivant dans une démarche qualitative nous a permis d'examiner la *mémoire des catastrophes* des Réunionnais : ses contenus, omissions et oublis. Il s'agit d'une mémoire se rapportant principalement à l'expérience des cyclones et qui se révèle sous la forme d'une *modalité passive* ou « endormie ». Les résultats nous ont permis de mettre en lumière les relations possibles entre *mémoire des catastrophes* et résilience : pour que la *mémoire des catastrophes* favorise la résilience, elle doit être *active*. Pour cela, un travail d'entretien de la mémoire et une attention portée aux processus d'enregistrement et de mémorisation seraient cruciaux afin qu'une résilience collective et sociétale advienne. Elle serait à co-construire en amont de la catastrophe, c'est-à-dire comme une *résilience proactive* avec la participation de divers acteurs concernés (autorités, populations, acteurs de la prévention et gestion de catastrophes, etc).

Mots clés : mémoire des catastrophes, résilience, cyclone, vulnérabilité, santé mentale.

Abstract

This article examines disaster memory as a driver of collective resilience in the context of natural disasters. Can disaster memory foster resilience and under what conditions? Based on qualitative fieldwork, we examine the disaster memory of the inhabitants of Réunion, its content, omissions, and forgetting. This memory is mainly related to the experience of cyclones and is revealed in the form of a passive or 'dormant' modality. The findings bring to light the possible links between disaster memory and resilience: for disaster memory to promote resilience, it must be active. For this to happen, the memory must be kept alive, and attention paid to the processes of recording and remembering to foster collective resilience. It should be co-constructed ahead of the disaster, i.e. as *proactive resilience* involving a range of stakeholders (authorities, populations, disaster prevention and management actors, etc).

Keywords: disaster memory, resilience, cyclone, vulnerability, mental health.

Disaster Memory: A Driver of Collective Resilience?

Introduction

The world is experiencing increasingly frequent and intense extreme weather events, such as heavy rainfall, storms, cyclones, drought risks, and heat waves, causing considerable and growing human and economic losses. According to the UN, the number of natural disasters has tripled in the last three decades. Although mortality rates have fallen in large cities and developed countries, the reverse is true in low-income countries and more isolated rural areas. A British study carried out by the NGO Christian Aid (2019) notes that disasters kill more people in poor countries and cost more in developed countries. Disasters can therefore be seen as an indicator of inequality.

France is the European country second-worst affected by natural disasters, particularly floods. This risk affects one in four French people. Réunion is particularly exposed to these risks. Sixteen percent of its population is affected by cyclones, lava flows, floods, landslides, forest fires, swells and tides, and earthquakes. Climate change, the effects of which are now obvious, accentuates these risks.

From risk to (socio)natural disaster

Studies made in a range of disciplines complicate the notion of disaster and call into question the term "natural". Some prefer to talk about "socio-natural" disasters to highlight the share of human responsibility in the disaster. For Duvat and Magnan, societies are instrumental in producing 'natural' disasters through factors such as urbanisation in at-risk areas, the development-based modification of natural processes, and the loss of connection with the environment due to a culture of engineering and technology. The purpose of constantly pushing the limits of risk is to control nature¹. To this extent, the term "socio-natural" disaster highlights the fact that disaster occurs when these risks affect a society made vulnerable by political or economic choices or forms of social organisation². According to Reghezza-Zitt, the main causes of vulnerability in Europe result from increased exposure in at-risk areas and the transformation of urban systems and populations poorly protected from natural disasters³.

International bodies, NGOs and some governments have been pushing for the implementation of policies to tackle the problem, giving rise to a "government of natural disasters"⁴. There is a growing move away from policies based on "blissful positivism" or a

1 Virginie Duvat-Magnan and Alexandre Magnan, *Des catastrophes ... naturelles ?* (Paris: Pommier, 2014).

2 Sandrine Revet and Julien Langumier, "Introduction" in *"Le gouvernement des catastrophes"* by Sandrine Revet and Julien Langumier (Editions Karthala, 2013)

3 Magalie Reghezza-Zitt, *Etudier les catastrophes naturelles pour ne pas les subir*, FM Global, 2014.

4 Ibidem

Resilience in natural disaster governance

This widely adopted concept is now central to natural disaster prevention policies. It is the paradigm in UN discourse and has guided international policies shaped by the Hyogo 2005-2015⁷ and Sendai 2015-2030⁸ frameworks. While its success can be attributed to its unifying and proactive dimension, as pointed out by Ruffat⁹ and Queneault¹⁰, its application

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d'inondation en milieu tropical. L'exemple de l'île de la Réunion », Norois, no 201 (1 décembre 2006):
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8546","issue":"201","journalAbbreviation":"norois","language":"fr","page":"45-66","source":"DOI.org
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Réunion","URL":"http://journals.openedition.org/norois/1753","author":{"family":"Lorian","given":"David
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de la Réunion”, Norois, no 201 (1 December 2006): 45-66.

10 Béatrice Quenault, "Résilience et aide internationale : rhétorique discursive ou véritable réforme?", *Mondes en développement* n° 180, no 4 (2017): 35

remains complex in practice. What can be done to tangibly promote the resilience of populations and regions? Which actions should be implemented and in what forms? The polysemy of the concept and its use in different subject areas have operational, methodological, and ethical drawbacks; the issues underlying this concept therefore require careful consideration. For Djament-Tran, it is important not to neglect *its political dimension*: "(...) it would appear essential to clarify where we stand when we use it."¹¹ One of the greatest dangers is to make people responsible and governments less responsible by ignoring relationships of domination and inequality and monopolising aid criteria¹².

As generally defined, the concept emphasises the ability of a system to adapt relatively quickly after a crisis. They focus on the post-event phase at the expense of prevention and population preparedness.

This paper therefore examines memory as a way of thinking about collective resilience upstream of the disaster.

Disaster memory and resilience

Can disaster memory be a lever for resilience, and under what conditions? In other words, can it be used to encourage preventive behaviour to better protect people?

Firstly, studies have shown that "in order to be operational, i.e. to encourage behaviour," the memory of *the risk* must "be given concrete form, updated (and) staged"¹³. To achieve this, local people must be able to play an active part in the debate, decision-making and/or commemorative practices.

Secondly, it is essential to take into account the specific features of the memory of an extreme event by considering its psychological dimension. We realise that when memory is linked to traumatic events¹⁴ it is both complex and paradoxical. According to Moreau, a

11 Géraldine Djament-Tran et al., “Ce que la résilience n’est pas, ce qu’on veut lui faire dire”, 2011, 9.

12 Béatrice Quenault, *Ibidem*.

13ADDINZOTERO_ITEMCSL_CITATION{"citationID":"Ty54tbfK","properties":{"formattedCitation":"Christine Labeur, \u00c0\u00e9cits de catastrophes se font m\u00e9moire du risque\", G\u00e9ocarrefour, n\u00b0 1 (2 juin 2013): 45-54, https://doi.org/10.4000/geocarrefour.8937.",\"plainCitation\":\"Christine Labeur, « Raconter l'inondation : quand les r\u00e9cits de catastrophes se font m\u00e9moire du risque », G\u00e9ocarrefour, no 1 (2 juin 2013): 45-54, https://doi.org/10.4000/geocarrefour.8937.\", \"dontUpdate\":true,\"noteIndex\":12},\"citationItems\":{\"id\":\"3372\",\"uris\":[\"http://zotero.org/users/848425/items/9MNT9SWC\"],\"uri\":[\"http://zotero.org/users/848425/item/s/9MNT9SWC\"],\"itemData\":{\"id\":\"3372\",\"type\":\"article-journal\", \"container-title\":\"G\u00e9ocarrefour\", \"DOI\":\"10.4000/geocarrefour.8937\", \"ISSN\":\"1627-4873,1960601X\", \"issue\":\"1\", \"journalAbbreviation\":\"geocarrefour\", \"page\":\"45-54\", \"source\":\"DOI.org (Crossref)\", \"title\":\"Raconter l'inondation : quand les r\u00e9cits de catastrophes se font m\u00e9moire du risque\", \"title-short\":\"Raconter l'inondation\", \"URL\":\"http://journals.openedition.org/geocarrefour/8937\", \"author\":{\"family\":\"Labeur\", \"given\":\"Christine\"}}, \"accessed\":{\"date-parts\":[[\"2020\",1,30]]}, \"issued\":{\"date-parts\":[[\"2013\",6,2]]}}}, \"schema\":\"https://github.com/citation-style-language/schema/raw/master/csl-citation.json\"} Christine Labeur, “Raconter l’inondation : quand les récits de catastrophes se font mémoire du risque”, Géocarrefour, no 1 (2 June 2013): 45-54.

14 Francisca Espinoza, "Silences de l'Histoire; étude sur la transmission de l'histoire récente du Chili (1973-1989) dans la génération des enfants de la dictature." (Thesis, Université Paris VII, 2015).

disaster is an event that resists the knowledge accumulated up to that point and creates a break that destructures our relationship with the world¹⁵. It therefore requires an effort of representation and consequently an effort of memory.

Lastly, research by climate historians has shown that memory of catastrophic events is short-lived¹⁶ and that if it is not kept alive, it is quickly lost, possibly leading to amnesia. How do we make sense of this? Is it forgetting or something else? How do memory and forgetting interact to shape disaster memory? And above all, how do we make it last? What tools are needed to keep it alive?

Maintaining disaster memory

Throughout history, various practices have kept disaster memory alive, such as ex-votos in churches, 'tsunami stones' in Japan - a means by which elders warn future generations of a risk - and marks showing the last rise in water levels following the 2004 tsunami and left in houses in Sri Lanka. In France, Law 2003-699 on flood and submersion markers aims to strengthen the memory of risk, raise awareness, and involve the population in prevention actions. In Chile, the Proyecta Memoria Foundation highlights the role of memory development in disaster prevention. Their slogan is "Memory saves lives". The forgetting of disasters is regarded as one of the causes of vulnerability. They aim to "spread" the memory through creative, participatory, and innovative initiatives such as cycling routes, installations in the hypocentres in earthquake-stricken areas, and the projection of images on the facades of emblematic sites. Their insight is particularly interesting, especially in relation to *symbolic rubble* as a tool for maintaining memory and resilience. Introduced into buildings and places of memory, it incorporates the negativity of tragedy and transforms it into something new. It transforms it while linking past, present and future in a dialogue between memory and the future.

Taking a similar approach, Le Blanc proposes *the ruin* as a tool of memory with the power to evoke and move. When integrated into the city, it can support a proactive process of resilience if done interactively: "The ruin must also be presented, put back into context, using instructive information panels (...) showing that the risk is still present and real."¹⁷ In France, for example, there are the ruins of the Malpasset dam in the Var department¹⁸.

There are other important ways to keep memory alive, such as *anniversary commemorations*. These spaces support prevention and the creation of links of solidarity and local memory. What's more, they are essential for disaster victims, for whom disaster memory takes the form of a duty not to forget because "it could happen again", or "it could be useful to others". From a subjective point of view, the refusal to forget is important to the extent that it makes it possible to integrate the event into their biography so that it does not become a

15 Yoann Moreau, ed., *Vivre la catastrophe*, Communications, 96.2015 (Paris: Éd. du Seuil, 2015).

16 Emmanuel Garnier, Frédéric Surville, and Jacques Boucard, éd., *La tempête Xynthia face à l'histoire* (Saintes: Le Croît vif, 2010).

17 Le Blanc in Djament-Tran and Reghezza-Zitt, *Résilience urbaines*, (2012) 153.

18 S Ettinger and S Auclair, "Préconisations pour la mise en place de marqueurs de risques naturels Rapport final" (brgm, 2017)

traumatic memory¹⁹. Socially, sharing this memory seems to be a form of resilience: "The memory of each serving the resilience of all" is the motto of the Institut de l'Histoire et la Mémoire des Catastrophes (IHMEC)²⁰. Individually, by sharing this memory, the disastrous event can be transformed by finding meaning in it. For example, "helping others" can help disaster victims rebuild their lives; it can also help create links and solidarity. The filmed testimonies of natural disaster victims on their YouTube²¹ channel are a step in this direction and raise awareness of the psychological and social effects of disasters.

These collective commemorative spaces *promote the process of recording and memory*. The study by Ullberg²² concludes that the forgetting of certain disasters is related to the absence of public commemorations. The key role played by recognition of the disaster in the public space makes it easier for authorities to record it in time and space as an event that "really did happen". This recognition is all the more important as it enables shared memories to be brought back into the picture to create *shared memories*²³ and promote the transition between individual and collective memory.

Natural risks in Réunion

Located in the middle of the Indian Ocean, Réunion Island is an open-air laboratory for natural hazards. Owing to its climate and geography, the region is highly exposed to hazards of this kind. Its record rainfall makes it particularly vulnerable to the risk of flooding.

We limited our research area to the district of Saint-Paul, one of Réunion's oldest and most densely populated towns, where vulnerabilities are shaped by spatial inequalities. The attractiveness of its seaboard has strongly impacted its urban development, with property prices among the highest on the island. Situated on the west coast, the town is exposed to all the island's hazards – forest fires, tsunamis, heavy swell, flooding, seismic activity, and landslides – except volcanic hazards. According to Saint-Paul's multi-risk RRP [Risk Reduction Plan] (2016), the most frequent major hazards are flooding and mudslides. The biggest cyclones to hit the commune of Saint-Paul were in 1919 - also known as the "plague" cyclone - and in 1948, followed by Hyacinthe in 1980, Firinga in 1989, Colina in 1993, Hollande in 1994, Dina in 2002, Gamèdes in 2007 and Bejisa in 2014 ("Coastal risks prevention plan: 'coastal flooding and coastline retreat'" 2018). The study by Mayer²⁴ mentions the cyclones of 1932 and 1948, Jenny and Hyacinthe, as the ones most likely to be remembered by older people.

19 According to M. Salmona, traumatic memory is memory that cannot be integrated into the subject's biography. It is associated with psychological trauma or post-traumatic stress disorder (PTSD).

20 See: Serge Tisseron, "IHMEC Institut pour l'Histoire et mémoire de Catastrophes", s. d., <https://memoiresdescatastrophes.org/>.

21 See: Luca Ciari and Francisca Espinoza, IHMEC (France, s. d.) YouTube channel.

22 Ullberg in Moreau, *Vivre la catastrophe*.

23 A. Margalit makes a distinction between memories shared by those who experienced the event from the inside and memories shared by society as a whole because the memory of the event was disseminated by communication vectors such as the State, the Church and the media. See Labeur (2013)

24 Isabelle Mayer Jouanjean, "L'île de La Réunion sous l'oeil du cyclone au XXème siècle." (Université de la Réunion, 2015), 155.

Review of current knowledge on the subject

As mentioned above, many studies examine the notion of resilience in the context of natural disasters in the disciplines of urban planning, architecture, social sciences, and the humanities. These studies include both supporters and critics²⁵ of this controversial notion. Although the importance of memory in natural hazard prevention is widely recognised, little research has been done into the links between memory and resilience. Notable among these studies are the work of British geographer Wilson on the relationship between social memory and *community resilience*²⁶, and the research by Gaillard on a *disaster subculture*²⁷.

25 Hugo Carton, "Chapitre 7. Une approche critique du concept de résilience", in *Penser la décroissance*, Nouveaux Débats (Paris: Presses de Sciences Po, 2013), 159-80

26 ADDINZOTERO_ITEMCSL_CITATION

{"citationID":"bpvS0jVH","properties":{"formattedCitation":"Geoff A Wilson, \u00a0\u00a0Community Resilience, Social Memory and the Post-2010 Christchurch (New Zealand) Earthquakes: Community Resilience, Social Memory \u00a0\u00a045, n\u00b0\u00a02 (juin 2013): 207-15, https://doi.org/10.1111/area.12012.", "plainCitation":"Geoff A Wilson, « Community Resilience, Social Memory and the Post-2010 Christchurch (New Zealand) Earthquakes: Community Resilience, Social Memory », Area 45, no 2 (juin 2013): 207-15, https://doi.org/10.1111/area.12012.", "dontUpdate":true, "noteIndex":27, "citationItems":[{"id":3400, "uris":["http://zotero.org/users/848425/items/XGHWX823"], "uri":["http://zotero.org/users/848425/items/XGHWX823"], "itemData":{"id":3400, "type":"article-journal", "container-title":"Area", "DOI":"10.1111/area.12012", "ISSN":"00040894", "issue":"2", "journalAbbreviation":"Area", "language":"en", "page":"207-215", "source":"DOI.org (Crossref)", "title":"Community resilience, social memory and the post-2010 Christchurch (New Zealand) earthquakes: Community resilience, social memory", "title-short":"Community resilience, social memory and the post-2010 Christchurch (New Zealand) earthquakes", "URL":"http://doi.wiley.com/10.1111/area.12012", "volume":"45", "author":{"family":"Wilson", "given":"Geoff A"}}, {"accessed":{"date-parts":["2020",4,13]}}, {"issued":{"date-parts":["2013",6]}}, {"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] Geoff A Wilson, "Community Resilience, Social Memory and the Post-2010 Christchurch (New Zealand), (juin 2013): 207-15.

27 ADDINZOTERO_ITEMCSL_CITATION

{"citationID":"Qi8isHCU","properties":{"formattedCitation":"Jean-Christophe Gaillard et al., \u00a0\u00a0Ethnic Groups \u00a0\u00a0Response to the 26 December 2004 Earthquake and Tsunami in Aceh, Indonesia \u00a0\u00a047, n\u00b0\u00a01 (octobre 2008): 17-38, https://doi.org/10.1007/s11069-007-9193-3.", "plainCitation":"Jean-Christophe Gaillard et al., « Ethnic Groups' Response to the 26 December 2004 Earthquake and Tsunami in Aceh, Indonesia », Natural Hazards 47, no 1 (octobre 2008): 17-38, https://doi.org/10.1007/s11069-007-9193-3.", "dontUpdate":true, "noteIndex":28, "citationItems":[{"id":3376, "uris":["http://zotero.org/users/848425/items/G7B25ANF"], "uri":["http://zotero.org/users/848425/items/G7B25ANF"], "itemData":{"id":3376, "type":"article-journal", "container-title":"Natural Hazards", "DOI":"10.1007/s11069-007-9193-3", "ISSN":"0921-030X", "issue":"1", "journalAbbreviation":"Nat Hazards", "language":"en", "page":"17-38", "source":"DOI.org (Crossref)", "title":"Ethnic groups' response to the 26 December 2004 earthquake and tsunami in Aceh, Indonesia", "URL":"http://link.springer.com/10.1007/s11069-007-9193-3", "volume":"47", "author":{"family":"Gaillard", "given":"Jean-Christophe"}, {"family":"Clavé", "given":"Elsa"}, {"family":"Vibert", "given":"Océane"}, {"literal":"Azhari"}, {"literal":"Dedi"}, {"family":"Denain", "given":"Jean-Charles"}, {"family":"Efendi", "given":"Yusuf"}, {"family":"Grancher", "given":"Delphine"}, {"family":"Liamzon", "given":"Catherine"}, {"family":"Sari", "given":"Desy Rosnita"}, {"family":"Setiawan", "given":"Ryo"}}, {"accessed":{"date-parts":["2020",3,5]}}, {"issued":{"date-

Battacharya and Lamond²⁸ have developed a conceptual map of the role of flood memory in the process of improving resilience based on theoretical research. This relationship has also been studied by geographers in France. Le Blanc (2012), for example, considers how resilience can help redefine the politics of disaster memory²⁹.

Dullfos and D'Ercole (1966) call into question the effectiveness of disaster memory in risk prevention. For these two authors, there is no direct link between memory and resilience. Among the factors that should be considered are the distance between what they call an *actual memory* (what happened) and a *useful memory* (capable of guiding preventive actions). Between these two memories, there are *mediating processes* that hinder this *useful memory* ("These mediating processes mean this memory is not used, or at least not enough to prevent a threat from turning into a disaster"³⁰).

As regards the notion of *disaster memory*, we note that it is seldom used in recent publications. When it does appear, it is associated more with *risk prevention*³¹ or *risk culture*³² than with the notion of resilience. Liégeois (2014)³³ questions the link between disaster memory and risk culture. In her opinion, disaster memory is conceived as a memory that is quickly buried due to a lack of space in which it can unfold and become concrete. The author points out that it should be nurtured and shared more widely in creative and diversified ways such as participatory theatre, nature outings, screenings, and debates, to promote a risk culture.

Climate historians have also studied disaster memory and the *obliteration of this collective memory*³⁴. Others have focused more on the reasons why disasters are forgotten and how institutions play an active role in this process³⁵.

Furthermore, very little work has been done on psychological health in natural disasters, either in relation to the practical aspects of dealing with it or as a scientific subject for study. This area of research is still therefore in the development stage. Fewer works have been published on this subject in French, with most research carried out in English-speaking countries. These include studies on the effects of flooding on mental health³⁶ and the importance of including this perspective in post-disaster response³⁷. In France, following

parts":[["2008",10]]}], "schema": "https://github.com/citation-style-language/schema/raw/master/csl-citation.json"} Jean-Christophe Gaillard et al., "Ethnic Groups' Response to the 26 December 2004 Earthquake and Tsunami in Aceh, Indonesia", *Natural Hazards* 47, no 1 (October 2008): 17-38.

28 Namrata Bhattacharya-Mis and Jessica Lamond, "Socio-Economic Complexities of Flood Memory in Building Resilience: An Overview of Research" (2014): 111-19.

29 Antoine Le blanc, "Remembering Disasters: the Resilience Approach.", 2012.

30 Robert D'Ercole and Olivier Dollfus, "Mémoires de catastrophes et prévention des risques", *Natures Sciences Sociétés, Forum*, 4, no 4 (1996): 386.

31 Ibidem

32 Marie Liégeois, "Mémoire des catastrophes et culture du risque", *For* 223, no 3 (2014): 89

33 Ibidem

34 Garnier, Surville, and Boucard, *La tempête Xynthia face à l'histoire*.

35 Susann Baez Ullberg, "Desastre y Memoria Material: La Inundacion 2003 de Santa Fe, Argentina", *Iberoamericana – Nordic Journal of Latin American and Caribbean Studies* 46, no 1 (24 January 2017)

36 Bob Carroll et al., "Health and Social Impacts of a Flood Disaster: Responding to Needs and Implications for Practice", *Disasters* 34, no 4 (October 2010): 1045-63

37 Jessica Lamond and D Rotimi, "An exploration of factors affecting the long-term psychological impact and deterioration of mental health in flooded households". *Environ.Res.*(2015)

Hurricane Irma in 2017, a study for the French Senate³⁸ noted the difficulty of detecting the psychological effects - on populations that do not seek help or who conceal their suffering - of complex post-trauma follow-up and the need for long-term monitoring. A new telemedicine system called KaribTrauma³⁹ has been launched in Saint-Martin and Saint-Barth to help people suffering from trauma.

Of the research carried out on Réunion, it is worth highlighting Isabel Mayer's doctoral thesis (2015) on 20th-century cyclones. Her work shows how attitudes to cyclones and risk perception among the inhabitants of Réunion have changed. She has noticed an increase in self-confidence, which could result from the development of more accurate weather forecasts. She also adds: "Cyclones are dangerous phenomena, the risks of which are all too often overlooked or ignored if they do not pass close by"⁴⁰. The people of Réunion are said to have short memories. Mayer explains that the degree to which cyclones are forgotten depends on the extent of the devastation. The ones most likely to be forgotten are referred to as a simple "kudvan" ("gust of wind") or a beneficial rainfall that does not cause collateral damage. Conversely, death plays a part in the memorability of a cyclone. Cyclone Firinga in 1989, in which four people died, was a traumatic event that triggered a prevention response.

Research overview

This research aims to better understand the relationship between disaster memory and collective resilience. We hope that the results will inform the work of actors in the field and of political decision-makers by suggesting courses of action that take account of the specific characteristics of the areas and populations concerned. Our research therefore aims to explore the following question: *how does disaster memory contribute to collective resilience processes?*

We hypothesise that the *active memory* of disasters fosters collective resilience.

To test this hypothesis, we studied the disaster memories of the residents of Saint-Paul in Réunion. We looked at the main content of this memory, its omissions and oversights, its representations and the main meanings to which disaster gives rise.

Methodology

This article is based on qualitative research. The main objective is to identify how disaster memory can contribute to collective resilience. The first phase, which was used to plan and prepare the site, involved *exploratory interviews* with an expert from Réunion⁴¹, risk

38 Guillaume Arnell, "Rapport d'information fait au nom de la Délégation sénatoriale aux outre-mer (1) sur les risques naturels majeurs dans les outre-mer" Report for the French Senate, 19 2019.

39 See: <http://soskriz.org/karib-trauma/>

40 Mayer Jouanjean, "L'île de La Réunion sous l'oeil du cyclone au XXème siècle.", 361.

41 Interview with Zoe Vaillant, geographer, researcher and author of the book "La réunion Koman ilé" (2008)

management professionals, a forecast engineer from France météo, and people from Réunion living in Paris. Our fieldwork, carried out in August and September 2020 in the district of Saint-Paul, involved two groups with whom we used two different interview techniques.

For the first group, composed of residents from the upper and lower neighbourhoods of Saint-Paul, the main aim was to explore disaster memory through *open interviews in which people recount their life stories*. We conducted 14 interviews with eight adult men and six adult women, aged between 25 and 71, from different socio-economic and occupational backgrounds, mostly underprivileged and middle class. All have lived through cyclones. Only two saw themselves as disaster victims. The interviews lasted from one and a half to two and a half hours in the homes of residents or on Red Cross premises. This interview technique gave us an insight into their subjective views using attentive and sympathetic listening. This listening technique is based on an awareness of the psychological effects this type of event can have (denial, trauma, fear, etc.). We believed this was essential in a study focusing on memory and resilience.

The second group was composed of natural disaster prevention and management actors from the administrative sector (DEAL, Saint-Paul district authority, TCO, CUMP, PIROI), non-profit organisations (Red Cross and MeteOR) and one educational establishment. We conducted seven semi-structured interviews with 11 people. We wanted to gather the views of these actors on the place of memory and the notion of resilience.

Based on *observations* carried out as part of our fieldwork on Réunion we identified a *geographical memory* through the various traces left by disasters (ruined buildings, flood markers, signs, etc.). We used *discourse analysis* for both the semi-structured and open interviews. We aimed to identify the specific nature of the disaster memory of residents and its modality (passive, active, and traumatic).

The analyses then sought to identify and put into perspective what was unique to the participants and what was transversal and shaped the specific characteristics of Réunion. Based on an analysis of these discursive data, we have drawn conclusions about the relationship between disaster memory and resilience. In the second group, the discourse analysis focused mainly on identifying the strengths and difficulties specific to disaster prevention and management, as well as the place of disaster memory and resilience in their missions.

Defining disaster memory and resilience

We define *disaster memory* as a set of representations of the past linked to a catastrophic event. Composed of memories and forgetting, experienced or communicated, it can be understood individually and collectively as part of an ongoing reconstruction process. It can teach us about the effects and ways of preventing or reducing the impact of disasters. Its action potential depends on whether the modalities adopted are *passive*, *active* or *traumatic*. An *active disaster memory* is not simply retrospective; it is also a "force for the future", nourishing a risk culture and helping us better protect ourselves. It is reported to be short-lived and must be nurtured in collective spaces for sharing and recognition between the various players involved (population and governments). What's more, sharing a disaster

memory helps to create links and solidarity. For disaster victims, this pooling of resources is an opportunity to develop and give meaning to their experience.

The vast majority of definitions relating to resilience emphasise the ability to adapt more or less quickly after a disaster. Often thought of a posteriori, in response to the disaster, i.e., reactive *resilience*, we believe that it is more appropriate to conceive of it as a process developed well before the disaster, i.e., as *proactive resilience*.⁴²

Findings

Disaster memory: cyclone memory

The *disaster memory* of the residents of Saint-Paul is mainly based on the experience of cyclones, the natural hazard most frequently mentioned by interviewees, regardless of their age or place of residence. Everyone, without exception, recalls their memories of different cyclones. These memories are mostly based on personal experience, but also on family stories passed down through the generations. They are much less likely to mention *other natural hazards* (forest fires and swell) or even omit them (landslides). The risk of an eruption of the Piton de la Fournaise volcano is the second most frequently mentioned hazard, followed by a sudden rise in water levels, a common phenomenon in the austral summer period, which is more prevalent on the island's east coast. Several interviewees mentioned this risk, which they associate with the memory of a canyoning accident in Salazie in 2010 when three people lost their lives. The *tsunami hazard*⁴³ is rarely mentioned, and when it is, it seems to be unknown, overlooked or misunderstood by most interviewees: "Here for the moment we haven't had any, I've never heard of them, but they look out for this, but it was never something we paid much attention to; maybe one day, maybe, we don't know." (28 years old, living in the lowland area of the Étang de Saint Paul).

Only one coastal resident referred to a "tidal wave". She describes being flooded more than once.⁴⁴ Disaster prevention and management actors take the same line. As one of them put it: "People still haven't taken on board the tsunami risk, it's abstract for them". In terms of preparedness, a special tsunami contingency plan (PSST) has been in place since 2008.

Disaster memory: a combination of "virtuosity and showmanship"

Far from being remembered as a tragedy or even a trauma, the cyclone has positive and beneficial connotations. It appears to be an integral part of the daily lives of the people

⁴² Djament-Tran distinguishes between *reactive resilience*, the ability to recover after a disaster, and *proactive resilience*, the ability to anticipate the event. See Djament tran et al, 2011 :135)

⁴³ According to the archives, Réunion was hit by tsunamis in 1867 and 1883. "The last major tsunami to hit Réunion was on 26 December 2004, and it caused mainly material damage, particularly to ports, but no casualties were reported." See: <http://www.risquesnaturels.re/risques/les-risques-majeurs/houles-et-marees>

⁴⁴ Interview in Creole, 71-year-old woman, simultaneous interpretation by a Red Cross volunteer.

we met, and they know the basic steps to take in the event of a tsunami. The cyclone's benefits include its cleansing effect, mainly on gullies, but also on microbes, miasmas, and diseases. "We say that the old people say that they remove the disease. The old people say that they remove germs from everything, purify the water, and rid the wind of mosquitoes" (47-year-old man, resident of Saint-Gilles Les Hauts). This representation of the cyclone comes from the stories told by the ancestors (grandparents and elders) handed down through the generations. Several interviewees used the term "a good cyclone" to describe these properties. The cyclone is also thought to help restore a healthy balance to Réunion's environment thanks to the rainfall, which is said to replenish the water tables affected by drought throughout the island, particularly on the west coast: "Even I said it jokingly, in March we needed a good cyclone to clean things up, but (laughs) it's a bit like spring cleaning, a cyclone cleans everything, it removes branches from the gullies and then it replenishes the water tables" (PIROI [Plateforme d'Intervention Régionale de l'Océan Indien] representative); "But after the cyclone there's a real racket, but it's good for nature; it's as if nature gets a second lease of life; it's like a battle, but it comes out of it; that's it, it's a second lease of life; but I think that the cyclone for trees, for nature, on the beaches, land or sea, it also plays a role, things grow, there are trees that can't be pruned, so all that sort of thing". (28-year-old, living in the lowland area of Saint-Gilles Les Bains).

The population and disaster prevention and management actors apply a system of meanings in which the cyclone is assigned value: the cyclone is useful and has an important role to play in the life and survival of Réunion's population. In a way, people even look forward to it. Paradoxically, the absence of cyclones in recent years is seen as a hazard by *prevention actors*. "Because there are no more cyclones, the risk culture is disappearing" (TCO representative; 50:29).

Content: recalling and forgetting in cyclone memory

The most frequently mentioned cyclones⁴⁵ are Hyacinthe (1980), Firinga (1989) and Jennie (1962). These cyclones caused considerable damage and death (25, 4 and 37 respectively). These omissions include the storms Clotilde (1987), Dina (2002) and Fakir (2018, mentioned by only one person). No one mentions Cyclone Bejisa (2014).

Among the places constantly mentioned in cyclone memories are gullies, much used by the inhabitants of Réunion for entertainment or domestic purposes, since in the past, the poorest families would wash their clothes in the gully.

In the aftermath of the cyclone, the gully becomes a place of recreation, with interviewees talking about family outings to see "the flowing gullies", fishing, and swimming. The gully is more likely to be remembered by the inhabitants of the highland area, where children used to play. Most recognise the danger but feel the need to go there "to see":

⁴⁵ The cyclones mentioned by prevention actors were Fakir, Hyacinthe and Gamedes. Only the DEAL and district authority representatives mentioned cyclone Bejisa; the district worker could not remember its name. A single resident also alluded to it, although he could not remember what it was called either.

"Children like it when the gully flows; children have learnt to swim in the gully; children here, they don't swim in the sea" (47-year-old man, resident of Saint-Gilles Les Hauts).

Popular knowledge is an important part of this memory. Certain natural signs warn of a cyclone's arrival. There are frequent references to heavily laden fruit trees, such as lychee and mango trees; the smell of alyssum perfuming the atmosphere; wasps nesting lower than usual or in less exposed places; birds flying away or ants moving out a few weeks before the cyclone. Highlanders appear more attuned to these signs and, unlike lowlanders, refer in particular to the sound of humming which warns of the arrival of the cyclone: "The locals say that when you hear the humming, the cyclone's coming" (71-year-old woman living in the highlights of La Chaloupe, Saint-Leu).

A memory that is not recognised as a trauma: fears and anxieties about cyclones

Cyclone memories are not described as traumatic. The most common representations associated with cyclones relate to their usefulness to Réunion's ecosystem. Memories are more likely to be positive (childhood memories of spending time with family, cleaning up disease and gullies, and solidarity between neighbours). These representations foster the development of a system of meaning that places the collective interest ahead of the individual damage suffered by disaster victims. However, it is useful to compare these representations with those of populations severely affected by cyclones. The problematic or salient aspects of cyclones are only mentioned during the interview, never as an initial memory. Does the strength of the collective memory organised around the usefulness of the cyclone keep a *dramatic memory* at bay⁴⁶? What's more, being a region historically affected by cyclones risks naturalising and even trivialising the effects of cyclones, pushing the psychological dimension into the background. To this extent, it is interesting to note that in its 17-year history, the CUMP⁴⁷ has never been called upon to intervene in the event of natural disasters in Réunion, despite its expertise and know-how in dealing with potentially traumatic events.

Fear of cyclones does not seem to be a central element in these stories; when it is, it is more likely to be restricted to the stories of elders passed down through the generations. They were the ones afraid of cyclones because they had been affected, lost loved ones or witnessed the destruction of their homes: "The relationship we have today is not one of fear; for us, it was a natural phenomenon; you have to be afraid of it; but when I see my grandmother, she was terrified; I think that what she experienced affected her physically and in her life". (TCO representative). Fear is present indirectly, however, as apprehension. Describing their memories of shutting themselves up at home when the cyclone hit, several interviewees said they could not sleep during the cyclone: "When there's a cyclone, you can't sleep, you're always awake, you can't sleep because you're on the alert...". (47-year-old woman, resident of Le Port). They generally express a feeling of security associated with changes to their habitat – more solid constructions that are more resistant to cyclones.

⁴⁶Understood as a memory connected with the distressing affects of the cyclone's impact.

⁴⁷ CUMP Cellule d'Urgence Médico Psychologique [Emergency Medical Psychological Unit]

The role of disaster memory for disaster prevention actors

All prevention actors, administrative and non-governmental, accord great importance to disaster memory, especially in relation to prevention. However, there is a gap between the importance of the role they assign to it and the implementation of practical actions to promote this memory in prevention and awareness-raising practices. For the TCO, memory appears to be an emerging area of work, considered in the short term, and the subject of interesting initiatives. It gives as examples a project to collect testimonies from schoolchildren on the experience of cyclones within their families⁴⁸ and event-based activities that highlight the memory of the elders. These actions, which were scheduled to take place in 2020, were however postponed due to the COVID-19 pandemic.

The idea is emerging in French administrative circles that disaster memory is accumulated through the experience of the people who work on it and is passed on orally and not systematised⁴⁹. This gives rise to an informal memory that depends on the people who have lived this experience. However, one of the interviewees is aware of the limits of this practice and stresses the importance of the PCS (Plan Communal de Sauvegarde [District Safety Plan]) implemented in 2018 in Saint-Paul, which standardises and systematises this memory, particularly in relation to crisis management: "That's what the PCS is for, we need a document that records the district's hazard history and organisation" (District authority representative). Both the district authorities and the TCO rely on the work carried out by the Red Cross and recognise their expertise and close ties with the local population. It is therefore mainly non-profit actors who are working to implement disaster memory as a means of raising awareness and preventing disasters⁵⁰.

Keeping memory alive

Churches as natural disaster memorial markers

With the exception of the church of Saint-Rose, we did not see any real effort to highlight memorial markers linked to natural disasters. There do not seem to be any flood markers despite being legally mandated in 2010. The memorial steles do not seem to be very visible and the use of the ruins to keep disaster memory alive could be given greater prominence. This is the case of the church of Saint-André, destroyed by cyclone Jenny (1968). Few of those interviewed knew anything about this church, and most were unaware of how it

⁴⁸ The initiative was going to be implemented at Grande Fontaine school, which is in a flood-prone area.

⁴⁹ It is interesting to note that we made the same finding in another sector of the French administration, in the crisis management department of the Ministry of the Interior (Report No. 2).

⁵⁰ They include the Paré pas Paré project run by the Red Cross, and the publication of historical accounts of cyclones by the non-profit organisation MeteOR on their Facebook page.

was destroyed or its location. It is not sufficiently promoted as a place for raising awareness and keeping disaster memory alive.

Geographical memory or the memory of time in nature:

The landscape of Réunion, with its characteristic geography, bears the traces of natural hazards. This is what we mean by *geographical memory*⁵¹, which is seen in the physical traces left by disasters in the landscape. Among these places of geographical memory, we identified, for example, the coastal road with its nets that are a reminder of the risk of landslides and falling rocks; the gullies and their sills that become hazardous during cyclones; and the impressive landscapes left by lava after volcanic eruptions on the Piton de la Fournaise volcano.

⁵¹ Blaž Komac, "Social Memory and Geographical Memory of Natural Disasters", *Acta geographica Slovenica* 49, n° 1 (15 December 2009): 199-226.

Conclusions

General conclusion

This paper highlights how disaster memory can foster collective resilience. To understand this, we identified three modalities of disaster memory: *passive*, *active* and *traumatic*. These categories are useful because they give us a clearer idea of the potential for action to raise awareness, prevent disasters and ultimately build collective resilience. The findings confirm our hypothesis: **disaster memory must be *active* to promote resilience**. In other words, it should not simply be retrospective or melancholic; on the contrary, it should be present and easily accessible to guide action in the event of new disasters. An active memory can learn from the past using knowledge of previous disasters that teach us about the hazards and vulnerabilities of an area, as well as ways of dealing with them. Ultimately, this memory influences the present, for people, politicians and disaster prevention and management actors. As it is short-lived and fades quickly, this memory must be kept alive to remain active. Various media can be used to keep the DM⁵² alive. History is one such medium and can provide content to 'materialise' it. It is possible to highlight this history using historical data, such as memorial markers, which include flood marks, buildings ruined in disasters, and commemorative spaces with anniversary dates to foster the sharing of testimonies, memory and solidarity. These media aim to contextualise disaster memory by fostering its sharing and dissemination and by stimulating public interest. A variety of creative approaches are needed to achieve this, in line with the specific socio-cultural and historical characteristics of the areas and their population.

Does disaster memory foster collective resilience, and under what conditions?

The first point to make when considering this question is that the notion of resilience should be treated with caution. DM as a driver of resilience is useful if it is seen as *proactive and societal resilience*. In other words, as a process to be prepared well in advance, and not just as a post-disaster matter. The emphasis on resilience in the post-disaster period, with its focus on moving forward, rebuilding and adapting quickly, can lead to injunctions that obscure the psychological effects of disasters and the importance of dealing with them quickly and over the long term. Societal resilience, conceived as a process, requires the involvement and responsibility of the various actors concerned, and cautions against the 'instrumentalisation' of the resilience discourse by getting people to take ownership of their misfortunes and thereby absolving political and government authorities of responsibility.

⁵²DM or disaster memory

Case study conclusions

What are the components of the disaster memory of the people of Saint-Paul? Our study revealed that *their disaster memory* is mainly composed of cyclonic events, which seem to mask other hazards. The latter are rarely or never mentioned in their personal accounts. This raises the question of the population's preparedness for other risks on the island, particularly coastal risks.

Far from being seen as a tragedy or even a disaster, the cyclone is represented by the people of Saint-Paul as normal, but also as something spectacular, particularly its aftermath, when we see greater risk-taking and therefore an underestimation of the hazard by the population. These representations highlight the virtues of cyclones: their usefulness in balancing ecosystems, and their "purifying" and cleansing role, rather than their dramatic or devastating aspects.

In this configuration, cyclone memory is both a strength and a source of vulnerability. A strength, because it seems to nurture a cyclone culture among the people of Réunion, where the risk is relatively well integrated by the population, which is familiar with the main safety precautions; a source of vulnerability, because if cyclones are considered part of normality, there is a risk of underestimating their dangerousness, particularly when cyclones occur far apart in time.

In the accounts we collected, cyclones appear to have collective qualities that are more important than the individual difficulties they are likely to cause. The painful, even traumatic, negative aspects are not directly addressed in the accounts of the people we met. And when they are, they are more likely to be confined to others, particularly the elders who were terrorised by past cyclones. Do people deal with memory in this way because of the time that has passed since the last major cyclone? Are the inhabitants of Réunion less afraid of cyclones? The devastating effects seem to remain in the background or are placed at a distance.

This finding raises questions about how the psychological effects of disasters are taken into account and how they are dealt with by both the public and the authorities. It is particularly important to raise awareness of this issue, both among the general public and political players and decision-makers, to help them take appropriate action in the event of future disasters. Furthermore, the importance of rapid, long-term care for disaster victims is crucial to avoid the complications of psycho-trauma⁵³ or PTSD (depression, stress, addictive behaviour, health problems, suicide, etc.), but also to prevent the *disaster memory* from giving rise to a *traumatic modality*. We believe that any attempt to build collective resilience should consider the psychological dimension of the effects of disasters.

The disaster memory of the inhabitants of Réunion is *a form of passive memory and should be further nurtured*. It is a kind of memory that remains dormant in some ways, waiting to be "awakened" by a new disaster. Accordingly, both actors and residents feel that it is a memory that is in the process of being lost, and justifiably so, given the advanced age of the

⁵³ Two months after Firinga (1989), cyclone Krissi indirectly claimed the life of one victim: a farmer who committed suicide when he heard the cyclone was approaching. See the Mayer thesis (2015) p. 333

people who lived through the major cyclones (1932, 1945, 1948, Jennie, Firinga, etc.), and the fact that it is the family, and particularly the elders, who have been designated as the main pathway for passing on this memory.

Although the administrative actors involved in disaster prevention and management recognise the importance of this memory, in practice and to date no spaces or actions have been implemented to this effect. It appears that non-profit actors are more heavily relied upon to complete this task⁵⁴ *Disaster memory* still has some way to go, therefore, before it finds its way into public policy. For example, we were surprised to learn that there are no flood markers in Réunion.

Several avenues need to be explored if this memory is to become active once again, and if it is to be a gateway to *collective and societal resilience*, such as highlighting existing but little-known memorial markers - including the ruined church at Saint-André - setting up flood markers, visual aids produced in collaboration with local artists⁵⁵, or photo exhibitions showing changes to the area and the impact of urban development over time, and so on. For this memory to remain active, it is therefore vital that these actions take innovative, creative forms that reach as many people as possible by stimulating interest and participation. The whole point of an *active memory* is to foster a process of resilience developed prior to the disaster, like *proactive resilience*.

Oversights and/or omissions of memory such as the cyclone Bejisa in 2014 and the tsunami in 2004, relatively recent events, raise questions about the processes of recording and remembering, and highlight the need to keep this memory alive. It would seem important, therefore, to set up public bodies to recognise catastrophic events and their effects (physical, psychological and social). This project could take the form, for example, of commemorative spaces that promote dialogue between different players in the community (disaster victims, authorities, district officers, volunteers, neighbours of different ages, etc.), to highlight the heterogeneity of memories. Anniversaries are a particularly good time to do this.

The involvement of the authorities in these actions, as well as during the crisis and reconstruction phases, appears to be an essential factor. In symbolic terms, this would seem to be a decisive part of the recording and memorisation process, by reaffirming that "it did happen". This would promote the construction of collective and local memory through the creation of "shared memories". It also seems important to highlight the content of local memory, such as popular knowledge about the cyclone, to bring meaning to the people in question. This could facilitate the memorisation and transmission processes.

Unexpected findings

We were surprised to discover that representations of cyclone memory focused more on the virtues of the cyclone than on its devastating effects. Among these virtues, the cyclone's role as a purifier of disease points to a long-lasting memory. Indeed, its

⁵⁴ Such as the Red Cross, through its Paré pas paré project (2011), or the MeteOr non-profit, which publishes records of past cyclones on social media.

⁵⁵ One example is the Réunion graffiti artist Meo 974

representations are associated with the cyclone of 1919, which was credited with eradicating Spanish flu.

Limits of the study

We were not able to examine the disaster memories of affected populations. A meeting with these people could have shed more light on the psychological effects of disasters on resilience, whether they help or hinder it. This would also have enabled us to identify differences and similarities in the configuration of this disaster memory for disaster-affected and non-disaster-affected populations.

Conclusions beyond the case study

This research sheds light on the complexity of the concept of resilience - its obstacles, advantages and drivers - and proposes alternatives for its implementation. *Disaster memory* as a possible route to collective resilience would enable us to guard against resilience asserting itself as a normative process. Indeed, it offers us promising avenues to explore for a contextual resilience that would be attuned to territories and populations.

Finally, this work has highlighted the importance of taking into account the psychological dimension of disasters and their effects, which are often invisible but not non-existent. Research into the relationship between this dimension and resilience merits further study.

Discuss the political, social and economic implications of the research results, and justify any possible follow-up

The proposal to use disaster memory as a way of building collective resilience, as we have presented it, has political, social and economic implications. The findings highlight a number of avenues to be explored both by those working in the field and by natural disaster prevention policymakers.

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