Climate change and human displacement: a sociological contribution to understand transitional societies*

Marcela da S. Feital Benedetti[1]

Supervisor: Lúcia da Costa Ferreira[2]

Co-Supervisor: Jessica O'Reilly[3]

Co-supervisor: Eduardo S. Brondízio[4]

Abstract

Human displacement is one of the most serious consequences of climate change. Some of its impacts, such as drought, desertification, ground water and soil salinization, rising sea level, are becoming more intense and imposing migration to some social groups and nations, whose fate is likely losing their land, their feelings of belonging and their culture. This research discussion aims to problematize to which extent the global knowledge of climate change and the global categories of environmental or climate refugees are considered meaningful, empowering and are mobilized (or not) by the social groups in this liminal condition, attempting to influence the decision-making about their own future. A case study was chosen: Shishmaref, an Alaskan native community which voted to be relocated due to sea level rise impacts in 2002, and was not resettle yet. Due to the impacts slow-onset characteristics and the temporality of the decision-making process, this case has been interesting to understand if these global narratives could be translated by grounded actors as part of their action strategy to influence policy-making related to whether and how to move and be relocated. To do so, the conceptual-analytical framework of arena has been adopted as an interesting tool to analyze this puzzle. And as one of the research results, this puzzle has been reframing part of this theoretical-methodological approach.

Key-words: climate change, environmental refugees, global knowledge, decision-making, arena

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[1] Sociology PhD student, Institute of Philosophy and Human Sciences, University of Campinas, Brazil

[2] Center for Environmental Studies and Research; Coordination of Research Centers, University of Campinas, Brazil

[3] Department of International Studies, School of Global and International Studies at Indiana University, United States

[4] Department of Anthropology, Center for the Analysis of Social-Ecological Landscapes (CASEL), and The Ostrom Workshop in Political Theory and Policy Analysis, Indiana University Bloomington, United States

Introduction

Human displacement has been part of our history in the world in several different ways. Wars, colonialism expeditions, prolonged violent conflicts, religion persecution, political or economic crisis and environmental disasters have shaped the movement of millions of people all over the globe. So why should we pay attention to those human displacements related to climate change? Because the former scenarios of human displacement permit the imaginary of coming back to *home*, to the origin place. However, climate change has been imposing a new scenario, the one of uninhabitable places forcing people to move with no perspectives of returning (Sassen, 2016a).

According to some global climate change reports, by 2050, 150 million people could be forced from their homes due to climate change (Environmental Justice Foundation, EJF, 2012). Understanding the global warming as one of the main biophysical consequences of climate change, slow-onset effects of it – drought, desertification, salinization of ground water and soil, rising sea level – are becoming more intense connected to human displacement. In some cases, the only way some people could be able to adapt climate change is moving. This scenario then places human displacement as one of the most frequent and inevitable responses of some social groups to address climate change (Kolmannskog, ed., 2008; IPCC, 1990, 2014). In addition, because of its potential for conflict between *displaced* people and *hosts*, climate change is considered one of the main threats to national and international security in recent times (Paulo Artaxo for Alves, 2017).

> Extensive climate changes may alter and threaten the living conditions of much of mankind. They may induce large-scale migration and lead to greater competition for the earth's resources. Such changes will place particularly heavy burdens on the world's most vulnerable countries. There may be increased danger of violent conflicts and wars, within and between states (Excerpted from the Nobel Committee's presentation in 2007 for A. Al Gore and the Intergovernmental Panel Climate Change, IPCC).

Millions have already been displaced, and a great part of them are in Africa (EJF, 2012). However, these gradually dispersing movements of people, not entirely supported by policies or a legal framework, have not happened considering the groups and communities which these people used to belong (Kolmannskog, 2009). They were dispersed attempting to find a place to survive. Several examples can be cited of potential human displacement caused by the new climatic pattern of increasingly frequent and

intense extreme events, which are no longer future threats but rather realities experienced in daily lives of many people spread all over the world: a) flooding in Bangladesh and Pakistan; b) sea level rising and coast erosion from Pacific Islands, such as Kiribati and Maldives, to native communities in Alaska; c) drought and desertification in large areas such as Sahel, in Africa. And none of these people have moved in a collective and organized way, considering their culture identity as specific social groups[5]. The stressful condition of dispersing movement imposes a concern of losing belonging\identity connections with land, culture and people, and *ripping the fabric of their societies*[6].

These cases bring up an interesting puzzle. Emerging evidences (EJF, 2012; Randall, 2013) say that several communities, identified as potential *environmental* or *climate refugees*, facing climate change impacts and their likely tragedies daily, are not able to move and continue stuck in risky places. So, the research asks what would be the elements that influence the decision of being relocated. Clearly, part of this problem has to do with economic condition, political power, infrastructure to support the replacement; however, this is not the aim of this research. The aim here is to cope a broader question about how climate change knowledge and global categories such as environmental refugees are considered usable and meaningful for the social groups facing the decision-making about their own future. Could be the stuckness a result or a manifestation of a mismatch between the global production of knowledge and categories about human displacement and climate change and the local realities and necessity of grounded effective policies?

This is part of a broader process of knowledge, narratives and categories production, and how they are translated to and mobilized by grounded social actors in order to achieve their demands. Thereby, an interesting research question arose based on studies of social science scholarship about the generation and use of global environmental knowledge (Turnhout, et al, 2016; Callison, 2014): to which extent global knowledge and global categories production really helps to attend local demands through policy-making? What are the implications of thinking about global categories, abstract, generalized and detached from local realities, which are so peculiar and urgent? How provided global

5 There is the Carteret case of moving as a community, however the organization of resettlement was mainly developed and established by their own, without counting on governmental or international support. To understand more about this case, watch: Redfearn, J. (filmmaker) 2015. Sun come up. Kanopy (Firm).

6 This expression was used by Susan Crate on The Anthropologist, a documentary about currently studies on the impact of climate change and human displacement. To watch: Kramer, S et al. (producers). 2016. The Anthropologists. Ironbound Films, Inc.

knowledge and categories are considered usable for decision-making in a context of human displacement related to climate change?

Specifying research questions

As the case chosen for this research, the examples cited above differ from sudden environmental events such as hurricanes, tsunamis, and earthquakes, which also contributes to the issue of people's movement. Shishmaref, a native village in Alaska which voted to be relocated due to the sea level rising is the case chosen of slow-onset climate change impacts. This characteristic is important due to the temporality between the perception of climate change impacts and risks and the relocation. Thus, this choice permits the analyses of the decision-making process with multiple actors, with diverse worldviews and interests, in different levels of action negotiating the condition and future of these social groups through the mobilization of global knowledge and categories.

So, more specifically, the research investigates two dimensions of this puzzle: on the one hand, it aims to understand to which extent the global knowledge of climate change and the global categories of *environmental* or *climate refugees* are mobilized by the grounded actors, reflecting (or not) their local realities; on the other hand, it aims to understand how they mobilize it intending to broaden their influence on the policy-making about their resettlement. Therefore, it analyzes if these global narratives could be translated by grounded actors as part of their action strategy to influence policy-making related to whether and how to move and be relocated.

To develop these research questions, the conceptual-analytical framework of decision arenas (Ferreira et al 2017; Renn, 1992; Hannigan, 1995) has been adopted in order to support a suitable analysis of data. Regarding the context developed above, arena could be, for instance, the international stage of negotiating and producing knowledge and categories about climate change; a national place of environmental governance and policy-making of resettlement; or yet a local deliberation about whether move from a risky place. Data were collected through the following main methods: 1) content analysis of newspaper articles and technical reports (available online) considering key-terms such as climate change, displacement, environmental refugees, environmental migration and Shishmaref; 2) literature review of the development of this key-terms; 3) scientific literature review produced about the case study; 4) case study with fieldwork and semi-

structured interviews with local actors. Thereby, the next sections will briefly overview the conceptual basis of the research which supports some of the questions; the case study; the theoretical-methodological approach; the preliminary insights from what have been done until now and what is intended for the next steps.

Literature review

Global production of environmental knowledge, assessments and categories has met a number of challenges: despite of the importance of global environmental knowledge and its main goal – serving environmental governance – its implication in local levels through policy-making is questionable (Turnhout et al, 2015). Turnhout and colleagues point to the contemporary dilemma of assessing climate in a way that can be globally compared and aggregated, at the same time assuring that these assessments are locally relevant and meaningful.

Scaling-up fragmented knowledge about specific localized places is an important step to transform it into new meanings, to convince broader stakeholders about the relevance of a grounded problem. In other words, global environmental knowledge is crucial for framing environmental change as a global problem and for finding solutions that are salient for global governance actors (Turnhout et al, 2015). However, with the intention of influencing relevant policy-making for these grounded problems, this knowledge and categories globally spread are frequently detached and decontextualized. So this scholarship has been pointing that most forms of environmental knowledge are often not seen as very powerful in that more restrictive sense of whether policy makers listen to what scientists have to say (Callison, 2014).

Turnhout and colleagues (2015) took the IPCC as one of the examples to illustrate it. The main effort of the IPCC is to create something global about climate change: a global pattern of temperature changes. But the consequences of this pattern of temperature changing are differently felt over the world. So, global climate knowledge production is useful for understanding and convincing some policy-makers and general public about the relevance of this issue, approaching climate as a single, interconnected, physical system. However, not focusing on giving policy-makers more regionalized information, could end up alienating local people and their diverse ways of knowing and living with climate change. Thus, it reinforces three key problems: 1) it frames climate change as a

distant and abstract threat; 2) it impedes integration of mitigation and adaptation; and 3) it fails to recognize the diversity of values and risk perceptions of people around the globe (Turnhout et al, 2015).

This reflection pushed the necessity of understanding global categories such as *environmental* or *climate refugees* as part of the environmental knowledge production. Relevant categories are not neutral acts of translation, but an intervention where knowledge not only represents, but at the same time also constitutes these categories as objects amenable for governance (Turnhout et al, 2015). Its abstractness could help policy-makers and the majority of the general-public to understand and to start caring about climate change and the human displacement issue. Mobilizing global categories and global environmental knowledge by the local actors could help them to be listened by others at the center of decision-making process, showing its connection with broader concerns. Yet, the same abstractness may also paralyze collective actions regarding local demands, where particularities are several and do not fit into global patterns of mitigation or adaptation. That is, its potential for informing and catalyzing effective action on the ground may in fact be very limited due to an essential characteristic of objective science.

Thereby, calls for evermore complete, standardized and globalized environmental knowledge are increasingly met with criticism. For this scholarship, an attempt to face this dilemma is purposing multi-scales approaches of knowledge production about global issues, which considers a network imaginary [7]. In other words, approaches which consider climate change all about scale and connections: an assemblage of people, non-humans, facts, biophysical and social consequences connected in different scales of time (present, past and future) and space (local, regional, national, international, global).

About scale, it permits an understanding of how small changes in world's climate balance due to human behaviors in a specific period of *time* and culture can have immense and unknown biophysical and social consequences on the ground realities in different ways, determining *current* and *future* states on the Earth (Brondízio et al, 2016). About connections, this network imaginary would allow us to be more conscious of interdependency of societies globally and the cross-scale assemblages, perceiving that a common problem could connect people and facts farther and stronger than their

[7] This was a term used brightly by Margaret Levi during the lecture: *Understanding Commons in a 'Whitewater World'*, on October 11th at the Ostrom Lecture. Inspired by her talking, and by works of Latour (1996) e Law (1992), *network imaginary* refers to the idea that we are living in a world that we are getting connected to people, environment, facts that are beyond our neighbors.

neighbors. So, it makes us questioning about our nested hierarchic way of scaling facts and relations (Crumley, 1995), but also shifts our attention from the panic of catastrophe to the empowerment and action due to our interconnections.

Thus, analyzing global categories produced based on global environmental knowledge regarding climate change and human displacement could raise the opportunity to rethink globalized knowledge and its implications in local level policies. Focusing on how grounded actors mobilize this global environmental knowledge may permit the research pointing to a grounded strategy to exercise power and make their voices louder in an urgent context of collective action.

The case study: “The first environmental refugees in America"

The case study was chosen regarding these characteristics of climate impacts slow-onset: Shishmaref, an Alaskan native community which voted to be relocated due to climate change impacts in 2002. This Inupiat rural village has approximately 600 inhabitants, whose main livelihoods are directly related to the Arctic environment: hunting, fishing, picking and handcrafting (Shishmaref Local Economic Development Plan, 2013-2018). In addition to typical subsistence economic processes of this society, these activities also define the annual cycles of travel, celebrations, and lifestyle, being part of the social life and defining social roles in the community.

Shishmaref sits on the small Sarichef island, five miles off the coast of the Seward Peninsula, having Chukchi Sea in the North and surrounded by the national park Bering Land Bridge National Preserve (Figure 1). Shishmaref has been inhabited, at least on seasonal basis, as camping site, for several centuries, but the nomadic community was pushed to settle in a territory because of the US central government's education and health policies in the early twentieth century. For the traditionally mobile Inupiat who settled there, Shishmaref made a certain amount of sense: it's ideally located for winter hunting on sea ice and close enough to the mainland to access traditional subsistence grounds in summer. It was, however, always tenuous ground to build on (James, 2016).

FIGURE 1: MAP OF SHISHMAREF, ALASKA, UNITED STATES OF AMERICA

Source: VOA, 2016

The school, clinic and church were established on native villages in Alaska, and the colonialism brought on benefits, though along with severe consequences. They lost their local language, which was prohibited to be taught; local foods have been served combined with industrialized items that can be bought at the only two grocery stores with outrageous prices; dogsleds were substituted by snowmobiles that help hunters to explore the ice as farther as the changes in the ice permits, but their gas is based on fossil fuels, as well as the heating in their houses. As many native villages in Alaska, life there combines – often disconcertingly – the very ancient and the totally modern (Kolbert, 2015).

Several are the impacts of climate change impacting Shishmaref people and being perceived by them since the 1970s. The stories always remember the changes in the sea ice and the physical and social problems related to this. The sea ice is starting to form later in the fall, also breaking up earlier in the spring, it is getting narrower, and mushier, becoming too dangerous to hunt using snowmobiles. It also contributes to the vulnerability to storm surges and, consequently, coastal erosion and loss of land in an already tiny island (Figure 2). Data indicates that this intensification can cause death and damage to the community, damaging housing and essential infrastructure (such as school, clinic, sanitation system, roads, airstrips and houses) (U.S. Army Corps of Engineers, 2009).

FIGURE 2: PREDICTABLE AND HISTORIC COASTLINES IN SHISHMAREF

Source: U.S. Army Corps of Engineers, 2009.

After two severe storms (1997 and 2001) that destroyed several houses, in the summer of 2002, residents of Shishmaref voted to move the entire village to the mainland, with the intention to keep the community together and the connections with the environment. The Government Accountability Office (GAO) noted that more than 200 native communities are experiencing erosion and flooding related to climate change (GAO, 2009). The estimated costs of the Army Corps of Engineers (ACE) in 2004 were 179 million dollars for Shishmaref to relocate in the continental part of Alaska (U.S. ACE, 2004)[8]. People express divided emotions about the relocation: some are overwhelmed by the stressful condition of moving, that they could lose their connection to the land, to *home*, to cultural identity; and some are excited by the prospect of gaining certain conveniences, like running water. But, what everybody agrees on that the village's situation, already dire, was only going to the worse (Kolbert, 2015).

With this local decision, and a push of media material about the "first environmental refugees in America" (Goldenberg, 2013), Shishmaref was inserted in an arena of negotiations about the relocation process involving articulations and connections with actors in different levels of action situation with diverse worldviews. Thus, due to the climate change impacts slow-onset characteristics and the temporality of the decision-

[8] According to interviewed local actors, this amount has increased to 400 million dollars in updated values.

making process, this case has been interesting to understand how global knowledge of climate change and global categories of environmental or climate refugees have been mobilized (or not) by the actors in decision-making about human displacement due to threats of climate change impacts and if they have been considered them usable or not to influence the results of this process.

About moving

According to people interviewed in Shishmaref[9], if an intense extreme event takes place there, they will be forced to be resettled. Moving to other communities near there, which also lack infrastructure to receive Shishmaref people, or to urban cities far from there, like Anchorage, Nome or Kotzebue, would rip their society fabric (Crate, anthropologist). Dispersing into several places or being guests in a strange city makes them worried about losing their connection to their people and to their land. On the one hand, their community feeling is very strong, and their family tie as a group is very meaningful. On the other hand, their land is not just a ground for economic development, it is also cultural defining social roles, habits, myths, ancestral values.

Being apart from the community, the sea ice and their land would be like losing the strong human-ecological relationship, one of the last things that was not taken away from them with the colonialism, a historical process which did not allow them to decide about their own fate. This reinforces what was said by Marino (2015), that the consequences of climate change are not only material, but they are also psychological, cultural and impact identity.

> If, as many have suggested, they simply integrate into other towns, they lose their sense of who they are. For the people of Shishmaref, Marino (2015) explains, this would be cultural genocide. Their lands and subsistence lifestyle define them. Everything else about their culture has already been taken away. That they live in a town rather than nomadically was entirely due to decisions made in Washington, D.C., and Juneau. Their present dilemma springs from a history over which they were often deprived of a say. What they want most this time is a voice in their own fate (James, 2016).

[9] Interviewed by the author in August, 2017, and by other researchers and reporters such as Marino (2015, 2012), Sheppard (2014), Bronen (2009, 2013).

Theoretical-methodological approach

Regarding the research problem, a combination of perspectives on arena concept seems to be quite adequate: a hybrid theory of the arena proposed by Ferreira and collaborators (2017 and 2012; Feital, 2014, 2016) – which combines and adapts mainly the perspectives of collective action and institutional analysis of Ostrom and collaborators (1999, 2005; McGinnis, 2011; Ruiz-Ballesteros and Brondízio, 2013), and the theory of resource mobilization of Renn (1992, 2008) and Hannigan (1995). Considering arena as a conceptual-analytical framework, it has been a useful tool that allows the decomposition and analysis of decision-making processes (McGinnis, 2011, Ostrom, 2011, Caldenhof, 2013), identifying the multiple levels of action and the fundamental elements that make up this decision-making process: multiple actors, with diverse worldviews, expectations, action strategies and power of influence.

Briefly, arena can be understood as spaces (not necessarily geographical) where different social actors interact in face of a specific collective decision that has to be made (Ostrom, 1999). The actors establish connections and opposition among them according to their worldviews – conflicts and alliances. And they also organize their groups and action strategies through mobilization of social resources in order to maximize their opportunities to influence the outcomes of an arena (Hannigan, 1995; Renn, 1992). That is, arenas (Figure 3) are social spaces of negotiation and discussion about political decisions in which social actors mobilize their social resources in order to expand their capacity to influence political decision-making in favor of their interests, goals and motivations (Ferreira, 2007; Bacchiegga and Ferreira , 2013).

The social resources were better developed by Renn (1992), and can be summarized in: money, power, prestige, technical-scientific evidence (Table 1). The one this research is more attentive to is the last one, due to the goal to understand to which extent global knowledge and the production of global categories about climate change and human displacement influence environmental governance on local level.

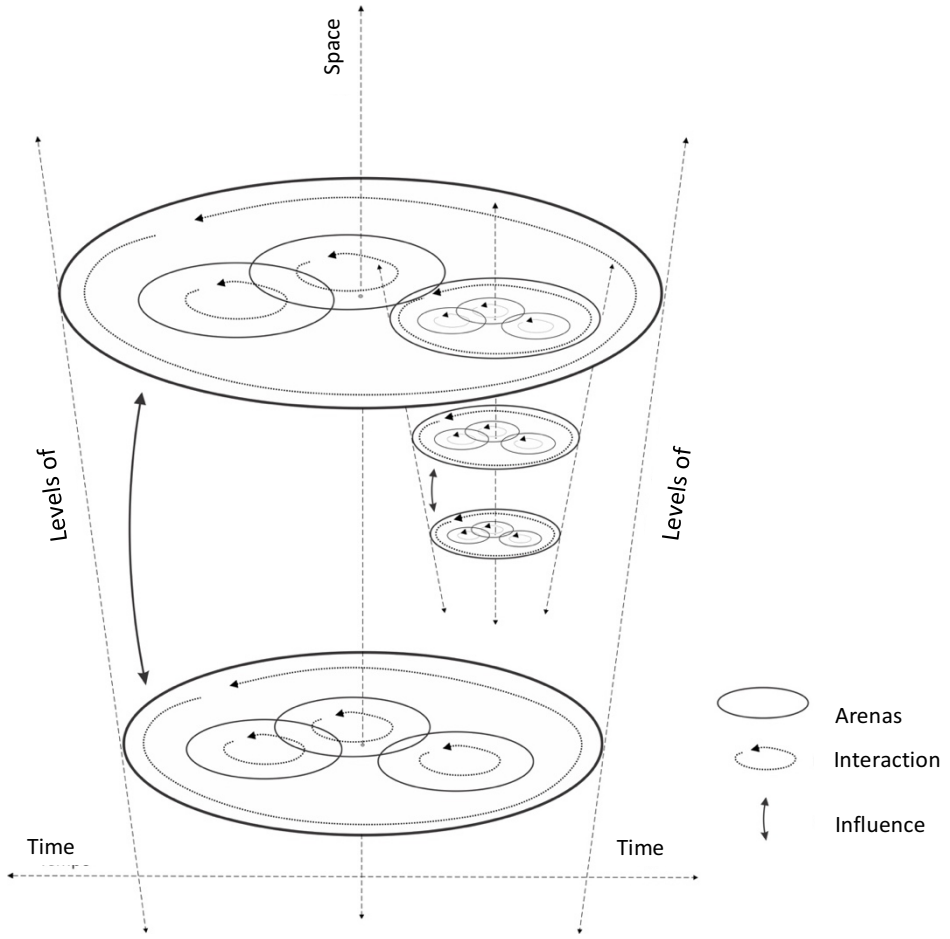
TABLE 1: SOCIAL RESOURCES MOBILIZED BY SOCIAL ACTORS IN AN ARENA

Social Resources	**Describing the importance in an arena**
Money	provides incentives (or compensation) in exchange for support or at least tolerance
Power	is the legally attributed right to impose a decision on others; conformity is established by the threat of punishment
Social influence	produces a social commitment to find support through trust, reputation, prestige and social reward
Value commitment	induces support through persuasion, solidarity, and cultural meaning
Technical-scientific evidence	Is used to convince people about the likely consequences of social actions; a powerful convincing resource because it potentially gives legitimacy to the justification and arguments of one group

Source: adapted from Renn, 1992.

However, these social resources are not equally distributed and accessed among the actors in an arena. This power asymmetry can influence the decision-making outcome (DeCaro, 2011; Ferreira, 2007; Feital, 2016). Yet this conceptual-analytical tool does not pose an ongoing reproduction of power relation in all existing arenas. That is, this approach does not place the rules (structure) present in the arena above the agency of individuals (action), or *vice versa*. Even considering the structural elements of rules (formal or oral) and norms, agreed by all actors to regulate their actions, the concept of arena also confers agency to them, allowing them to interfere both in the outcomes of the negotiation of decisions as well as in the rules that organize an arena. Considering this, arena is circumstantial contingent and dynamic, because actors are able to change strategies, restructure and\or subvert rules; at the same time arena is procedural, because it is within a historical process.

FIGURE 3: DESCRIPTION OF THE ARENA AS A HOLON



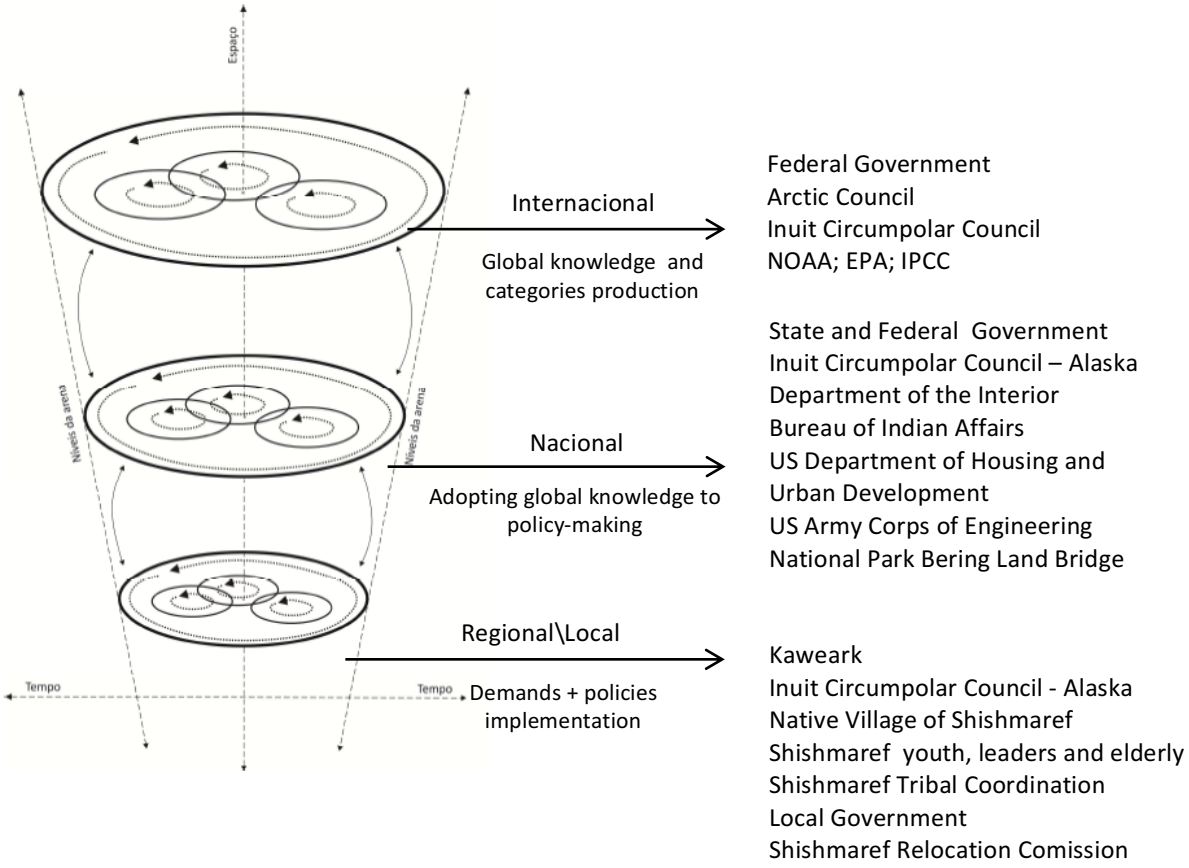
Source: Adapted from Ferreira et al. 2012, Calvimontes 2013. In this figure one can understand how each level of the arena is composed of actors (individuals or groups) in the process of negotiating a decision that they try to influence from the mobilization of social resources. These actors can also be understood and decomposed as arenas, depending on the research interest. Interactions between participants at one level influence the interactions at the other levels.

In this way, it permits to visualize a tensional and pulsating movement between situation, history and arena; between contingency and permanence; between creativity and reproduction; which happens simultaneously and constantly produces changes in different levels of social organization, as well as in several scales of space-time analysis. In summary, this tool allows the research to analyze the data and to understand both the structural factors that organize the interactions and connection between social groups and the dynamics of the interactions and strategies of action that these actors adopt to influence the results of negotiations in a decision-making process.

With this analytical framework it is possible to look at the Shishmaref decision-making process about human resettlement due to climate change impacts as a large arena that has several stages intertwined (Figure 4). Each stage is constituted as a space where the actors

are in the same situational level negotiating decisions based on their interests, roles, action strategies and capabilities to mobilize social resources. Their interaction in one level can influence the interactions in other levels of action situation.

FIGURE 4: SHISHMAREF CLIMATE CHANGE ARENA



Source: Adapted from Ferreira et al. 2012, Calvimontes 2013. Here, an adaptation showing how each level of the arena is seen and composed by actors (individuals or groups) in the process of negotiating the decision of resettling local communities affected by climate change impacts.

For instance, regarding the arena of environmental knowledge production and translation, it is easy to see the scaling-up influence, where the fragmented knowledge about grounded problems is transformed into national and international issues. On the other path, the interactions at the international level, where are the actors responsible for global production of environmental knowledge and categories, have influence into the national level, where the actors are responsible for environmental governance guided by what is

produced as a result from the former level. The national level has influence at the local level through the policies that are decided by actors in this stage.

However, the literature review and the fieldwork puzzled the research with the complexity of this idea of conceptual-analytical arena framework, which perhaps inherited a perception of more stable ways of connections and nested action situations. Without undermining this approach, because it actually works when one thinks about relations of influence of global knowledge, policy-making and policy-implementation attending some grounded demands, the next section will show how this research is permitting a struggle of rethinking this frame. It will present some insights of how the mobilization (or not) of global knowledge of climate change and global categories of environmental refugees by the grounded actors is establishing powerful multi-level connections which embarrass the hierarchy nested levels of arena.

Preliminary insights

Here I provide an initial thought on two dimensions of this problem. First part will show the elaboration process of the term *environmental refugee* interpreted in science and largely adopted by media, introducing some of the problems related to this term; the second part will discuss the translation of global knowledge about climate change by the local actors intending to broaden their influence in the decision arena, but also showing the mismatch of global categories and local worldviews.

The challenges of a monocausal term

According to the first methodological step, content analysis of media articles, I thought I would be immerging into a place where people would advocate for being relocated through the flag of *environmental* or *climate refugees*. This because, as already mentioned, Shishmaref was considered the "first environmental refugees" in America (Goldenberg, 2013). I had the assumption that they would adopt these global categories to make their voices louder and widen any influence into the results of the policy-making process of being relocated. Nevertheless, my assumptions were soon broken down.

The concept *environmental refugees* was coined by El-Hinnawi in 1985 describing people who have been forced to leave their traditional housing, temporarily or permanently,

because of a marked environmental event (with human or natural causes), endangering their existence or seriously affecting their life quality. This concept was widely used by academics, politicians and media due to its potential of being one of the most advanced human crises of our times (Myers, 1993), and thus it was crucial to put this issue and its consequences into the global political agenda.

However, this term also aroused several criticisms due to its monocausal character, difficult to be proven empirically and likely to be simplistic and unilateral (Black (2001) and Piguet (2008). It does not consider that the relationship between extreme environmental event and human displacement is not so linear and direct. In some cases, as highlighted by Randall (2013), the lack of resources ends up trapping social groups in a territory impacted by environmental or climatic change.

The focus on sudden extreme events along with this looking at a single cause tend to conceal the fact that environmental changes and impacts are channeled through social, economic and political factors (Clark, 2008) in a complex assemblage of connections. It conceals the fact that Shishmaref contemporary risk dilemma, for example, is also a historical product that ignored local knowledge about their own fate (Marino, 2015). Thus, this term is neither helping to promote the development of an urgent legal framework to deal with slow-onset climate change impacting mass human displacement, nor being helpful for realities similar to Shishmaref. Besides the stress of moving and losing cultural identity to be strangers elsewhere, Shishmaref shows that the equation anthropogenic climate change-erosion-relocation is not an accurate analysis (Marino, 2015): it shows how multi-causal linkages go beyond the biophysical impacts on the island, and so go the consequences and solutions for this dilemma.

Shishmaref case reframing the frame

A literature review focusing on the lived experiences of a global climate change – particularly done by anthropologists in local communities – shows the rejection of these categories on the ground (Marino, 2015; Callison 2014) and a lack of these terms in their *vernacular*[10]. According to Marino e Ribot (2012), Marino e Lazrus (2015), Bronen

[10] By vernaculars Callison (2014) means the interpretative framework by which a term comes to gain meaning within a group and the work of translation such a term must undergo in order to integrate it into a group's worldview, ideals, goals, perceptions, and motivations to act. That is, how a group talk about climate change reveals their worldview.

(2009, 2013), Sheppard (2014), these discursive resources do not match the local actors' expectations and interests. They are not meaningful for those who do not intend to be strangers elsewhere, but want to keep their livelihood, values, cultural ties with the environment which builds their felling of belonging.

So, if Shishmaref people do not fit into and do not mobilize the environmental refugee category, what do they do to make themselves listened by outsiders? How do they empower themselves to put their demands on the policy-making agenda? Would they be aware of the environmental knowledge globally produced to influence environmental governance and political actions in local realities?

Being there just reaffirms how climate change is part of Shishmaref people's lives, not as something they attribute to mythic reasons, but as a vernacular they really adopt because it has been coming to gain meaning within their community. From the young to the elders, from the officials and leaders to the inhabitants, they always inquiry about what another researcher is doing there, and at the moment they hear the term *climate change* they already have something to tell. How a member of their family lost a house due to storms, which are becoming more intense and frequent with global warming; how a father had difficulty last year to hunt because the sea ice was not so thick; how the animals are moving differently due to the temperature changes; how the berries are coming earlier, because the winter does last less; the examples are uncountable of how they do perceive the climate change impacts. It seems, sometimes, they wanted to convince outsiders they are conscious and they are living this global problem.

They definitely know what this global production of environmental knowledge is talking about. They actually use it to relate what is going on there with what other parts of the world are also experiencing, such as other native communities through Alaska and the Arctic; Kiribati and other Pacific Islands; among others. Mobilizing climate change knowledge permits to find a common ground problem all over the world, showing that "what happened there, does not stay there"[11], showing that they are connected with other localities due to their same experiences.

Adopting this knowledge and showing their connection to other grounded realities is part of an action strategy to convince policy-makers, media and general public to care about

[11] This is a slogan often used by advocates of native communities in the Arctic. To better understand, check: Ulmer, 2013; Watt-Cloutier (2015).

them. This strategy aims to put them in the same stage (action situation) of negotiation about their future, along with different actors in multi-levels (state and federal governments, international and national agencies, etc.) and different power of influencing the decision about resettlement. That is, being connected makes their voices louder. It is not just a common problem, but also a common way to translate them that helps social groups such as Shishmaref to be talking their demands to the center of knowledge production and international and national policy-making agencies.

They also highlighted media and science key-roles for their empowerment in this decision arena. For them, at the first moment, being connected to reporters, sent there to tell Shishmaref's story of climate change to the world, was a strategic tool for convincing local groups in favor of relocation, then influence the central government, Juneau and Anchorage, and to assure them that such groups needed assistance (Sheppard, 2014). Also, during my fieldwork, some interviewees told how important the presence of researchers is due to science capacity to scale-up what is going on there. Callison (2014) defines this scientists and media roles as near-advocacy, referring to those who are bound by professional norms of objectivity, independence and distance, and yet choose to articulate (in varying ways and extents) the need to address the wide range of predictions and risks associated with climate change.

The current steps of the research have been showing that global environmental knowledge about climate change and human displacement influence a power relation with double face. That is, it helps local groups to make sense, giving reasons to policy-makers to care about their demands, putting themselves in other stages of negotiations. However, when translated to categories by this global center of knowledge production, the social science scholarship of S&T studies has been showing that most forms of global environmental knowledge are often not seen as very powerful in its guidance role for environmental governance (Turnhout et al, Callison, 2014). Local social groups are not represented by the categories, which ends up diminishing their power to influence on their own future and paralyzing ground actions. Categories are so detached and decontextualized, not representing local main goals, that they prefer to not mobilize them as part of their strategies to be listened. Climate categories as part of global knowledge narrative do have limited potential for ground action, not helping social groups to leave this liminal condition of not having a safe and meaningful place to belong.

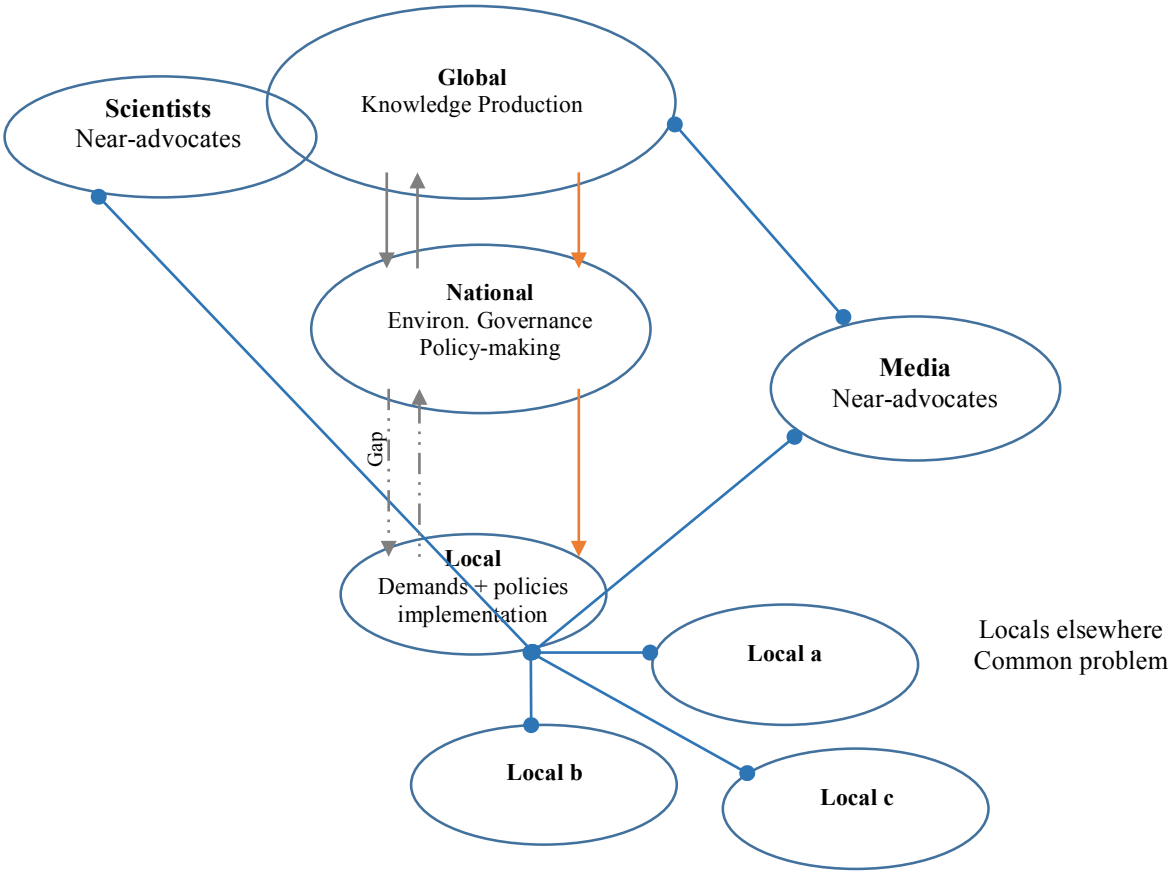
Next steps

All these connections among different actors, worldviews, interests, action strategies, expectations and power of influence was a great opportunity to rethink arena framework. Figure 4 shows how we tend to view a decision arena: nested hierarchic action situations in different levels influencing each other from the broader to the narrower and vice versa (sometimes). But, when we look at this arena considering the production of knowledge and its influence on environmental governance and decisions about climate change and mass human displacement, this layout tend to be more complex. The concept of heterarchy (Crumley, 1995) has helped to understand that there are some default relations\connections that are complex, but there is not a hierarchic relation of control. Thus, looking at that figure, it is a beginning to understanding, but it is not as complete as reality is presented, because: 1) local actors in Shishmaref seemed much more strongly related to local actors from other parts of the world, and this seems to be the exercise of their power for many local groups over the world; 2) there seems to be a gap regarding the national level, due to, at least in part, the lack of a legal framework to protect climate refugees, preventing effective grounded actions; 3) near-advocacy, media and some scientists should be represented in some way.

The connections among local actors and near-advocates of science and media have been highlighting the changes on the nested layout of arena conceptual-analytical framework. This is because influencing the national level to get support from the actors in that action situation through policy-making has not been easy for local actors to achieve. So, due to this gap of influence from national to local levels, the influence from local to national has been finding out some mediators, such as the connections to locals elsewhere, to the media and scientists, making their demands meaningful and achieving first the attention from international actors instead of national ones (Figure 5).

Rethinking and redrawing this arena framework attending realities such as Shishmaref is a hard task and hence it is in the next struggles to be done. Here is a first attempt to complexify the arena framework with a network imaginary.

FIGURE 5: FIRST DRAFT OF RETHINKING OF ARENA FRAMEWORK



Source: elaborated by the author, adapted from Ferreira et al. 2012, Calvimontes 2013. Without undermining the former figure, because it actually works to analyze great part of an arena, here is an updated layout, attempting to show broader and strong connections among locals facing similar problems, which make them stronger and meaningful for scientists and media, the near-advocates mediators. Due to the gap of influence of local and national levels, these mediators will influence the global level, where the actors could push the national level to act through environmental governance.

According to Callison (2014), the work of translating a term must undergo in order to integrate it into a group's worldviews and motivations to act. That is, how a group talks about a term and how do they act about it reveals their perceptions of the world. Valuing the connection among people with the environment and the land, reveals the worldview of local groups facing climate change impacts. This shows how being connected is important to them, it shows that to them we are all one, we are all connected being in the same world, and that the action to change their situation needs to come from everyone. Is this a near-advocating role from this paper? Would reframing an analytical framework

be the main goal of this research? Well, maybe a great part, trying to go along with S&T studies and present a new imaginary to understand the world. But it might also be an attempt to reveal how science influences empowerment and governance.

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