

# 11 Anthropologies of the Future

## On the Social Performativity of (Climate) Forecasts

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### 1 INTRODUCTION

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3 Anthropologists have often described how their interlocutors make fore-  
4 casts of all sorts as part of their cultural practices, social organization,  
5 and economic systems. Being able to forecast harvests, rainy seasons, wars,  
6 electoral results, marriage, illness, as well as good or bad luck in general  
7 seems to be an integral part of how societies imagine and organize them-  
8 selves. In times of climate change, the activity of forecasting gains special  
9 significance in the western imagination. Current efforts to tackle climate  
10 change involve a range of different objects of forecast, from climate states  
11 and weather events to demographic trends, economic scenarios, and con-  
12 flict analyses.

13 At the same time, forecasting practices and methodologies are far from  
14 being widely accepted among the many diverse global populations. Meteo-  
15 rology, the very science that informs us about the changeable nature of the  
16 atmosphere, has historically faced criticism and mistrust in both western  
17 and nonwestern settings (Anderson 1999, 2005; Crate and Nuttall 2009;  
18 Curry and Webster 2011; Edwards 2010; Fine 2007; Roncoli, Ingram and  
19 Kirshen 2002; Taddei 2012a). Beyond climate science, in recent years, legit-  
20 imacy crises have also affected economics (Krugman 2009; Montier 2012),  
21 political science (Diamond 2002; Putnam 2002), and genetics<sup>1</sup> (Hall 2010;  
22 Zimmer 2012), to mention just a few other fields that are heavily reliant on  
23 forecasting practices.

24 This chapter intends to discuss the relationship between how humans  
25 perceive the future,<sup>2</sup> how they inscribe it into discourse and representa-  
26 tion, and how this is connected to the ways they exist and act in the  
27 present. For this I will be using as a case study the social uses of climate  
28 forecasting, combining theoretical discussion and analysis of ethno-  
29 graphic material I have gathered in Northeast Brazil among both meteo-  
30 rologists and individuals in rural areas who produce climate forecasts  
31 from observations of nature. More specifically, this work focuses on the  
32 use of authoritative narratives about the future in politically charged con-  
33 texts, addressing the effects of such narratives on the social and political  
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lives of those involved, both those who produce the narratives and those for whom they are produced. It is important to make clear, right from the outset, that this is not an ethnographic analysis of the professional activities of scientists<sup>3</sup> or of other agents who produce forecasts. It is rather an analysis of ways in which forecasts can affect the world once they are disseminated. While social expectations and anxieties also concomitantly affect the activity of producing forecasts, that is an issue I have discussed elsewhere (Taddei 2005, 2012a,b) and will not go into here.

The process of dissemination is often the moment when the producer of the forecast feels that he or she is losing control of it—the forecast traveling through diverse, sometimes unforeseen social spaces, establishing intended and unintended, symbolic and material connections. In a word, the analysis here presented could be more properly described as focusing on situations of *border contact*—where the danger of resignification, semantic drift, miscommunication, and trouble is more pronounced and, as a result, concern about control more intense—rather than a strict analysis of a scientific practice.

The argument presented in this text is the following: forecasting is a performative social action; as such, it is a form of discourse about the future that affects the way individuals and groups perceive time. In other words, forecasting is a practice associated with the *social construction of temporality* (Adam 2008). Since time is a concept that, as Gell puts it, “provides the means for the relative unification of otherwise diverse categories of processes . . . ; [as, for instance] biological processes with social ones, psychological or subjective processes with objective, clock-timed ones, and so forth” (2001: 315–316), the activity of imagining the future and of realizing these imaginative constructions constitutes an important element in our cultural strategies for integrating the disparate parts of our lives into more or less coherent wholes. In other words, talking and thinking about the future is part of how we live *through* reality (Ingold 1993).

In terms of its performative nature, forecasting is a typical *speech act* (Austin 1975; Rosaldo 1982; Searle 1969, 1971) in the sense that it does not (or not only) describe a situation or communicate information, but instead affects the existence and configuration of the situation or communicative process. An elementary feature of forecasts is that, in the act of addressing the future, they change the present—even if only minimally, by creating in the actor a disposition toward mitigating the unfavorable predicted event or, on the other hand, taking advantage of predicted opportunities.

At the same time, an approach focusing strictly on what people do or do not do in regard to a forecast, and the resulting economic implications—by far the most popular one in the larger transdisciplinary field of research on adaptation to climate change (e.g., Groves and Lempert 2007; Iglesias 2007; IPCC 2012)<sup>4</sup>—misses what is, from a sociological

1 perspective, the most interesting aspect of the matter, which is that an  
2 utterance that is performative in respect to temporality may, under spe-  
3 cific circumstances, become an existential node, a point of articulation in  
4 the experience of reality or the *lifeworld*, to use Ingold's concept (2000),  
5 where social relations and the perception of the environment are undis-  
6 sociated. As I intend to demonstrate, this has important social and politi-  
7 cal consequences.  
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#### 10 THE PRAGMATICS OF SEASONAL CLIMATE 11 FORECASTING IN CEARÁ, NORTHEAST BRAZIL 12

13 In turning to a more detailed discussion of the performative dimensions  
14 of forecasting, I will focus on how social cohesion and accountability, on  
15 one hand, and the creation of certain stable forms of the perception of the  
16 environment, on the other, become intertwined in the temporal experience  
17 of reality mediated by the forecast.

18 The ethnographic data to be presented and discussed in this text was  
19 collected between 2003 and 2006, a period in which I resided in the state  
20 of Ceará, in the Northeastern region of Brazil. I carried out participant  
21 observation at the Foundation for Meteorology and Water Resources of  
22 the State of Ceará (FUNCEME), in the state's capital city, Fortaleza,  
23 engaging with the meteorologists and agency officials responsible for  
24 interaction with journalists, politicians, and technicians from the many  
25 state government secretariats that request meteorological forecasts. I  
26 also spent a considerable amount of time tracing the networks connect-  
27 ing climate forecasting and water related conflicts in the rural areas of  
28 the state, mainly in the Jaguaribe Valley, in the eastern part of the state.  
29 In practice, this meant attending over fifty participatory water allocation  
30 meetings across the valley and in Fortaleza. In around a third of these  
31 meetings, meteorologists from FUNCEME were invited to present sea-  
32 sonal climate forecasts to water users, most of them farmers.

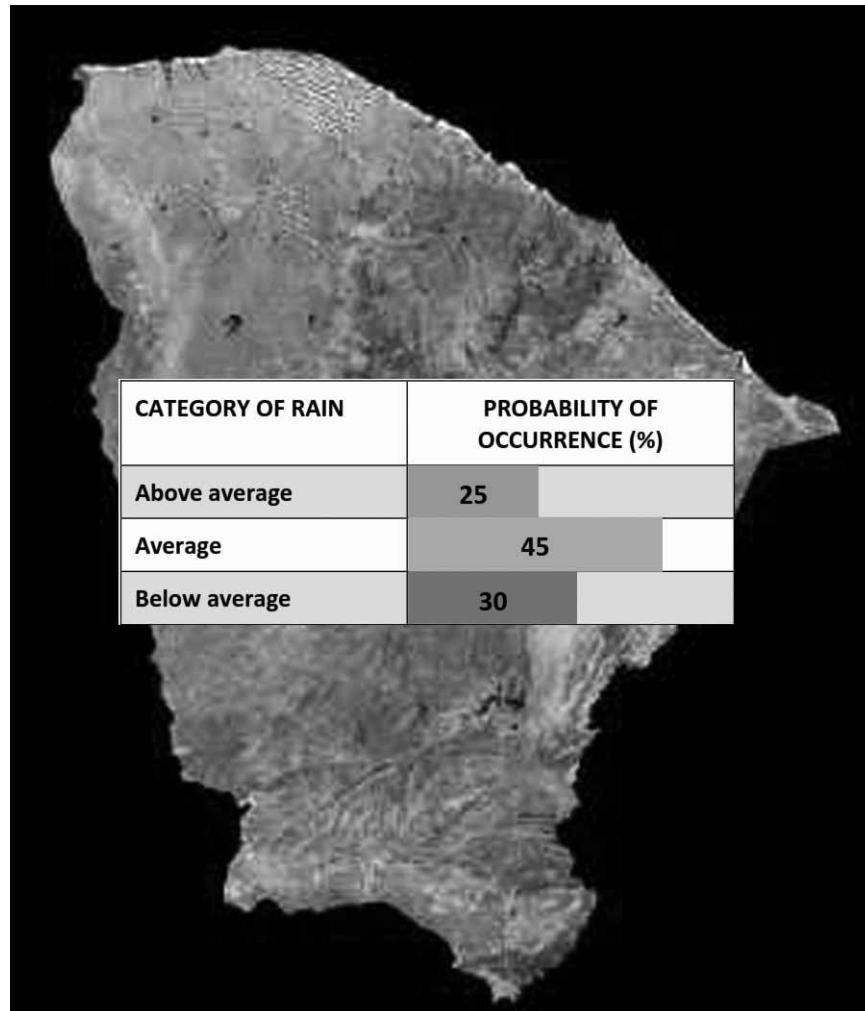
33 It is important to highlight the differences between types of scien-  
34 tific meteorological forecast, in order to be able to understand how they  
35 affect reality. Weather forecasts refer to real meteorological events (spe-  
36 cific events such as rain) and atmospheric conditions (such as tempera-  
37 ture at a specific time and place), in a space of time ranging from a  
38 few hours to no more than two weeks. Besides computer models and  
39 statistical tools, real-time monitoring technologies, such as radars and  
40 satellite images, are crucial in this type of forecast. Seasonal climate  
41 forecasts, on the other hand, involve aggregate, long-term atmospheric  
42 patterns (total expected precipitation, or expected average temperature  
43 for large areas), using a seasonal time frame. Short-term monitoring is  
44 mostly irrelevant here; the ability to estimate climate variation across  
45 a period of months or years depends on the availability and quality of  
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meteorological data from the past. This is a real challenge, given that in most parts of the planet, the systematic collection of meteorological data started only in the 1950s and 1960s. When historical records are short, it becomes difficult to identify patterns of variability on a time frame of decades, for instance. Here is one important difference between seasonal and climate change forecasts: new sources of paleoclimatological data are found almost every day, through ice drilling, tree ring analyses, and geological studies, among others, which results in the more or less continual improvement of climate change scenarios. In respect to seasonal forecasting, the historical database of measurements grows very slowly. After the real breakthrough of the modeling of the El Niño event in the late 1980s, and its teleconnections—that is, its influence on different parts of the world—resulting in computer models that simulate the circulation of air throughout the globe (global circulation models), the advances have been slow.

The forecasting in question in Ceará is composed of a numeric prediction correlated to total rain precipitation measured in millimeters throughout the entire rainy season (but divided in periods of three months for computational convenience) over the whole geographical area of the state, and expressed in the form of probabilities grouped into the statistically determined categories of “below historical average,” “above historical average,” and “around historical average.” These three categories are arrived at using a database of daily precipitation, for a period of 30 years (sometimes the last three decades; more often, though, a “canonical” historical series of measurements is used, ranging from 1971 to 2000<sup>5</sup>). A textual and graphic example of the forecast is presented below.

I also interviewed a large number<sup>6</sup> of agronomists, hydrologists, engineers, and farmers, in both irrigation projects and rain-fed agricultural areas. This led me to come into contact with farmers who personally produce climate forecasts based on popular traditions of reading the behavior of animals, the development of local plants, and the appearance of the atmosphere, as signs of upcoming rains. Gilton de Araújo is one such rain prophet in the town of Caicó, in the Seridó region. He usually observes the behavior of the red ants on his farm in the months prior to the rainy season as an indicator of how the season will be. If at the end of the dry season these ants leave the dry areas of the riverbed and move to higher ground, it is taken as a sign of approaching rains, because once the rain arrives, the rising water level in the river washes away these low-lying ants’ nests. In December 2003, for instance, the ants were observed to be climbing palm trees, something that he claimed never to have seen before. Then, in January 2004, it rained at an unprecedented level for that month, with many communities flooded and more than 90,000 people affected (Taddei 2005).

Some of these individuals, dubbed “rain prophets,”<sup>7</sup> gather each year in the municipality of Quixadá in the weeks prior to the beginning of the



*Figure 11.1* The forecast for the rainy season in the State of Ceará, for the period of February, March and April of 2012, is of 45 percent of probability for the normal category, 25 percent for the category above normal, and 30 percent for the category below normal. Forecast image reconstructed by the author. See FUNCEME (2012) for the original. The background image is available at Miranda and Coutinho (2004).

rainy season. Since 2003, I have attended eight rain prophet meetings, and I have also interviewed many of them on different occasions.

The Brazilian Northeast is a relatively highly populated region and the poorest in Brazil. The state of Ceará is known for its pristine beaches and for periodic droughts that ravage the state's hinterland. The state's rural population numbers around 2.2 million people, 75 percent of whom depend for their subsistence on family-based, rain-fed production of mainly corn

and beans. According to official data, in 2009, some 41 percent of the 8.6 million inhabitants of the state lived below the poverty line<sup>8</sup>; for the rural population, this rate increased to 60 percent (IPECE 2010). The majority of the population identify as Catholic, although there are also local elements of Amerindian and African religious traditions.

The rainy season in this region lasts from February to May, a period in which there is usually abundant stream flow in the rivers. There is no significant precipitation during the rest of the year, and before the construction of reservoirs, all the state's rivers would typically dry up.

Given the central role of climate in diverse aspects of life in this semiarid region, it is not surprising that ways of combating drought have included significant scientific efforts. In addition to past applications of cloud seeding technology, reservoir building, and the adoption of efficiency-driven water management models for the state hydrosystem (Orlove et al. 2011; Taddei 2011), one recent technical response on the part of the state government has been an attempt to improve climate prediction. The capacity to predict general patterns of climate variability has improved over the past twenty years, especially after the El Niño phenomenon was modeled and studied in depth (Broad et al. 2007; Edwards 2010). In the late 1990s, FUNCEME became part of a network of national and international institutions that jointly monitor meteorological indicators and issue forecasts for the Brazilian Northeast. In recent years FUNCEME attained the computational power to run sophisticated mathematical models, developed jointly with climate scientists based at the International Research Institute for Climate and Society at Columbia University.

## FORECASTS AND PROMISES

It is not unusual for the press in Brazil to use the verb *promise* in referring to climatic forecasts, as Figure 11.2, taken from a newspaper of Ceará, illustrates. This occurs not only in Brazil but also in many other parts of the world, as we can see in the list of newspaper articles below, collected randomly from the Internet:

- “Alex Deakin swears: BBC weatherman promises ‘bucket loads of c\*\*\*’ in UK.” *Metro* newspaper (UK), February 21, 2012
- “Meteorologists promise hot weather in September.” Beach Bulgaria website, September 2, 2011
- “Meteorologists promise rain on Sunday.” *North County Times* (California), March 19, 2011
- “A good sign for a good year: first rains next week. Meteorologists promise rare early rain the second day of Rosh HaShanah.” *Israel National News*, September 17, 2009
- “Moscow testing cloud seeding; promises winter without snow.” *Meteorology News*, October 19, 2009

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Figure 11.2 “Yes, we can! Barack Obama promises a greener planet, and FUNCEME (promises) a rainy and also green Ceará”—*O Estado* newspaper, January 26, 2009.

According to Hannah Arendt, *promising* creates shared visions of the future, thus reducing the cognitive range of possibilities and facilitating coordinated social action (1998: 237). A promise is a force that maintains social cohesion in a community, and signifies the capacity to make use of the future as if it were the present (Bruno and Martins 2008: 5). In the words of Arendt, “when people come together to bind themselves to a future, the covenants they create amongst themselves can throw ‘islands of predictability’ into the ‘ocean of uncertainty,’ creating a new kind of assurance and enabling them to exercise power collectively” (Arendt 1998: xix). This effect of the imagination of the future over life is particularly salient and relevant in critical situations, where coordinated action is imperative.

Forecasts arguably carry the same implications, and the intuitive use that journalists make of the idea of promising, in referring to climate forecasts, seems to support this assertion. Ethnographic data also testify to this. In Ceará, a number of authors affirm that farmers don’t use forecasts for their agricultural activities but rather adhere to the traditional practice of starting to sow when soil humidity reaches a foot in depth (Finan 1998; Pennesi

2007a,b; Taddei 2005). Nevertheless, a great deal of attention is dedicated to both meteorology and the rain prophets' activities, which suggests that the population is not interested (or not mainly interested) in the economic value of the information. Additionally, analysis of rain prophets' forecasting seems to point toward a positive bias—that is, of generally forecasting more rain than is subsequently recorded (Pennesi 2007a,b). According to the rain prophets themselves, one of the main goals of forecasting is to encourage farmers to sow (Martins 2006; Pennesi 2007a,b; Taddei 2005). Persevering with agricultural production in the face of difficulty is seen as a moral duty, and frequently one of the criticisms directed against scientific climate forecasts is that they tend to be “negative” and to “discourage” people (Pennesi 2007b; Taddei 2005). In the face of high levels of collective anxiety caused by drought, the rain prophets' forecasts provide a positive message in the hope of creating social cohesion in the face of a possible community crisis. As Bennett (2011) suggests, it is not unusual for societies to institutionalize sources of optimistic discourse; in this sense, rural Northeast Brazil is no exception.

Another pragmatic similarity between forecasting and promising is that both are often seen as creating social bonds that result in the author of the promise or forecast being held accountable for the social effects of the promised or forecasted phenomena. The use of the verb *promise* in referring to forecasts in the media naturally horrifies meteorologists, owing to the implication of accountability expressed therein. For the rain prophets, the cost of having to reconstruct their credibility when the forecast does not materialize is not viewed as being as high as the negative implications of the social unrest created by a “negative” forecast. In any case, in years when the signals point to a higher chance of drought, prophets tend to remain mute or to increase the ambiguity in the formulation of their messages (Pennesi 2011; Taddei 2006). This appears to be a strategy used to avoid receiving blame<sup>9</sup> (Taddei 2012a). Even if the indeterminacy of reality seems evident from a logical perspective, social groups tend to refuse to acknowledge it; it is a fact that blame is a persistent feature in the lives of climate forecasters (Taddei 2012a). In 1997, for instance, the perception that the climate forecast for the rainy season in Ceará was wrong generated social reactions so intense that state congressmen proposed that FUNCEME should not be allowed to release forecasts to the public<sup>10</sup>, and journalists suggested closing the agency<sup>11</sup>.

Both in forecasting and promising, trust and authority are central requirements for performative efficacy. And, as in the case of the forecast, indeterminacy and unpredictability continuously challenge the validity of the promise over time:

The moment promises lose their character as isolated islands of certainty in an ocean of uncertainty, that is, when this faculty is misused to cover the whole ground of the future and to map out a path secured



1           in all directions, they lose their binding power and the whole enterprise  
2           becomes self-defeating. (Arendt 1998: 244)

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4           For this reason, it is widely recognized that both forecasters and those who  
5           make promises need to exercise a great deal of caution in the process. Wag-  
6           ner, for instance, suggests that weatherpersons in the United States tend to  
7           act in humorous ways as a strategy to get the audience not to take them—  
8           and their messages—too seriously (1981: 69).

### 11           THE TASK OF FLATTENING SPACE AND TIME

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13           The condition that gives forecasting the performative effect of promoting cohe-  
14           sion among members of a group, or at least of synchronizing mental images  
15           of the future, is its conceptual nature. As typical examples of metaphorical  
16           thinking (Lakoff 1980; Ortner 1973; Wagner 1989), forecasts project exist-  
17           ing ideas and strategies of thought into the future. What enables forecasts to  
18           produce synchronization of experience of the world, through the creation of a  
19           common perception of the future, is the fact that they are based on conceptual  
20           simplifications, often organized in more or less rational ways.

21           Forecasts are specific visualization devices, giving perceptual, textual,  
22           and visual form to the ways in which perceptions of the world are enacted.  
23           They are often metasemiotic messages, in the sense that they carry,  
24           encoded in their form, ideological configurations that deeply affect how  
25           the phenomenon they refer to should be perceived. Scott (1998) speaks  
26           of certain ideological features of modernism identified in some forms  
27           of forecasting. “The carriers of high modernism,” he writes, “tended  
28           to see rational order in remarkably visual aesthetic terms. For them, an  
29           efficient, rationally organized city, village, or farm was [one] that *looked*  
30           regimented and orderly in a geometrical sense” (1998: 4). Forecasts per-  
31           form this perceptual effect in the reverse direction: they are at the same  
32           time a rational organization of the perception of the world and a descrip-  
33           tion of the world—a combination that has the potential to create a sense  
34           that the world is more rationally organized than it really is. Climate  
35           sciences systematically represent nature in relation to systems of equiva-  
36           lence, through quantitative measurements, in metricalized ways. Even in  
37           the situation in which the recipient does not trust the forecast content,  
38           its form and structure still may set the tone for the overall debate, defin-  
39           ing what in the world is salient and merits visibility, especially in what  
40           concerns spatial and temporal references.

41           As a result of this “ordering” of the atmosphere, forecasts have the poten-  
42           tial to produce the decontextualization of experience, weakening the bonds  
43           between individuals and their local contexts and reinforcing abstract concepts  
44           of time and space. Scientific forecasts, and climate forecasts in particular,  
45           function as deterritorialization devices. By understanding that what we call  
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“the future” is always part of our *present* narrative, the forecast rhetorically affirms the disconnect between ideas and social actions from the context in which they exist. This is owing to their being open to temporal dislocation, from the present to the future, without losing integrity or coherence—what Latour called “immutable mobiles” (Latour 1987, 1999; Preda 2002). Being able to talk about the climate of the future, and utilizing terms commonly employed in meteorology, depends on the capacity of the speaker to make the audience forget that their perception of the climate is deeply affected by their social, cultural, and political circumstances (Ingold 2000, 2010; Taddei and Gamboggi 2010). Arendt attributed this work of decontextualization to all modern scientific endeavors, opposing what she called (context based) “natural science” to western “universal science” (Arendt 1998: 268).

Yet the farther away the social context where the forecast plays its role is from the direct, immediate experience of the lifeworld—where continuous creative improvisation actualizes the implicit contract produced by the forecast, thus preventing major social ruptures—the harder it is to sustain the performative efficacy of the forecast. In such a situation, energy and resources need to be invested in the maintenance of the social validity of the concepts around which the forecast is structured. Depending on the scale of operation of the actors involved, an enormous amount of effort and energy may be required. Consider, for instance, the efforts of national governments to stabilize a certain collective understanding of what the national “territory” is (Bourdieu 1989)—through mass schooling, censuses, cartography, satellites and the images they produce, military border patrols, funding of national sports teams, media agenda setting, propaganda and advertisement, and many other things—so that they can be able to say meaningfully what is going on in the “nation” and where it is heading. When this massive effort is not possible or not effective, the expectations created by the forecast will not materialize, social cohesion will decrease, and accountability rituals will be enacted (Douglas 1992) as a way to deal with the negative outcomes of the lack of correspondence between aspirations about (and preparations for) the future and how it materializes—outcomes that can be dramatic and in some cases deadly.

The creation of a widely shared, stabilized perception of space and time is a requirement for the exercise of bureaucratic domination in modern states (Scott 1998). For that very reason, the bureaucratic efforts in keeping perceptions and representations synchronized and controlled must operate ceaselessly. Scientific weather and climate forecasts become expedient resources for bureaucratic control. As a number of authors have remarked (Adam 2008; Arendt 1968, 1998; Bakhtin 1981; Benjamin 2002; De Vries 2011), specific temporal frameworks have a determinant influence over what individuals and groups perceive in the world, how they construct their range of possible actions, and how they realize their existence. Under these conditions, forecasts, as *timescape-generating practices*, constitute a crucial element of the political agendas at all levels of human existence.

1 In Ceará, one agricultural policy, called *Hora de Plantar* (“Sowing Time”),  
2 is exemplary of the way in which meteorological forecasts are turned into  
3 bureaucratic procedures associated with state level spatiality and temporal-  
4 ity. In the mid-1990s, the state government decided to buy drought resistant  
5 seeds from national agricultural research companies, and to distribute them  
6 to small producers in the state’s rural areas. Yet because these seeds were  
7 expensive, the government decided to distribute them only after meteorology  
8 signaled that the rainy season had finally started and the soil had reached the  
9 required levels of humidity for optimal planting. The government feared that  
10 the farmers would use the seeds at the wrong time and lose their crops as a  
11 result. The plan required farmers to wait for a “green light” provided by the  
12 climate scientists. The attitude of the government infuriated local agricultural  
13 leaders. According to local planting practices, farmers plant on each and every  
14 rain occurrence that humidifies the soil to the depth of one palm. The ratio-  
15 nale for this is that seeds can be bought on the market but rains cannot. In  
16 general, the first rains of the season do not last long and the sprouts soon die.  
17 But during some years, the first rains are intense enough and last long enough  
18 to sustain crops, and during such years farmers enjoy two harvests of green  
19 beans and corn, greatly improving their annual income. Farmers know they  
20 will lose some seeds in the process, but they expect that the total gain during  
21 good years will compensate for the seeds lost during others. Meteorology can  
22 predict, with high rates of success, the total amount of rain expected during a  
23 rainy season, but it cannot predict when the first rains of the season will fall  
24 or if dry periods will occur during the middle of the rainy season. As a result,  
25 seeds distributed by the government very often reached the communities too  
26 late, when farmers had already used regular seeds.

27 For many years a large number of local leaders complained, during  
28 meetings with agricultural extension officers and in the media, about this  
29 misplaced use of the meteorological forecasts. Meteorologists also com-  
30 plained about the program, although less vocally, particularly once they  
31 perceived it as seriously damaging the public image of meteorology. In the  
32 early 2000s, the government finally decided to abandon the program and  
33 to transfer the decision of when to distribute the seeds to local leaders and  
34 local managers of agricultural extension services.

35 What this episode illustrates is that seasonal climate forecasts are produced  
36 according to the spatial and temporal references of the official bureaucracy  
37 and not to those of the particular users of the information. Farmers are not  
38 concerned with spatial scales much larger than their region or the watershed  
39 in which they are located; they are also resistant to change their sowing tradi-  
40 tions because meteorology is not capable of predicting the exact beginning  
41 of rains. In a word, they don’t use climate seasonal forecasts in their agricul-  
42 tural activities because the forecast is structured around phenomenological  
43 standards that are foreign to them. Yet farmers are exposed to the pragmatic  
44 effects of forecasting—as how they may affect the availability of agricultural  
45 credit programs at federal and state levels, for instance. There were years, in  
46 the early 1990s, when the forecast pointed to “lower than average” rains,

what was interpreted as a drought forecast, and as a result some credit programs were canceled even before the arrival of the rainy season. 1  
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Not surprisingly, the absolute majority of the institutions who used FUNCEME's forecasts were government secretariats (water resources, agriculture, public health, civil defense). Being part of the state government, these secretariats had to work with spatial and temporal measurements at a statewide scale, which is also used in the forecasts. This explains the success of FUNCEME in reaching the state bureaucracy, which has no equivalent in any other social or economic sector in the state. 3  
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### FEAR OF THE PRESENT 10 11 12

Forecasts are also integrally and intrinsically linked to collective emotional configurations. They are usually associated with some kind of fear of the present and tend to constitute a reaction or resistance against it. Beyond the obvious fear of the destructive forces of nature, forecasting and fear may also be connected in a more philosophical sense. Heidegger, for instance, suggested that modernity brought with it a consciousness of fundamental alienation as a structure of everyday life: the fact that the present can never be recognized but only felt. Cognition involves a time lag from perception that condemns our intellectual sense of the present to always refer to the past and the present to be intrinsically indeterminate (Heidegger 2008). In art, this resulted in liberation from intellectualism and in an openness to the immediate present as an experience of the sublime, the ecstatic, and beatitude (Charney 1995: 390). From this perspective, the forecast can be seen as a conservative existential reaction from sectors of society that are less predisposed to uncertain experimentations: if the immediate present is always beyond reach, the task is to colonize the future through the projection of conceptual schemes and tropes onto it. Making the future (conceptually) mimic the present/past is then a bold conservative move, a mark of social contexts focused on the conventional control of actions and ideas (Wagner 1981). 13  
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In other words, forecasts can be transformed into, among other things, conservative reactions against reality. Complexity and variability, or "the proliferation of hybrids" (Latour 1993: 41), disorganize the sense of progression that constitutes the keystone of modern temporality. Forecasts, particularly ones operating at large spatial and temporal scales (like climate forecasts), can act as discursive reformations: they project the past or the present over the future, but in a way that (atemporally) makes both the past/present and the future look and feel simpler, more stable, and more rationally organized. 33  
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### LIMITS TO THE PRAGMATIC EFFICACY OF FORECASTS 41 42 43

These performative dimensions, as mentioned in the introduction, are not unconditionally granted, but are potentials that may, or may not, 44  
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1 materialize. They are, in one way or another, associated with political rela-  
2 tions—in the sense that forecasts, driven by collective anxiety and a desire  
3 for control, reduce the range of possible imagined futures, generate specific  
4 forms of accountability and transference of responsibility, produce descrip-  
5 tions of reality that lead individuals and groups to imagine the world as  
6 more rationally organized, and also less connected to their lives. These  
7 are questions that have deep implications for how individuals and groups  
8 understand themselves, the world, and themselves in the world.

9 Moving in another direction, however, forecasts are also polysemic  
10 constructions that are prone to resignification. Performance is a key fea-  
11 ture in how individuals and groups construct and manage their distinct  
12 identities (Bauman and Briggs 1990; Goffman 1959), how they represent  
13 cultural difference (Wagner 1981), and even how meanings are associated  
14 with things and events (Wagner 1989). Since all these performances hap-  
15 pen in and through time, they are immersed in forms through which actors  
16 imagine the future. Some imagined futurescapes have the power to reframe  
17 the forecast and produce idiosyncratic pragmatic effects. The ability of the  
18 forecast to retain the pragmatic effects of the social environment in which it  
19 was produced depends, even if minimally, on the producer and the recipient  
20 of the forecast sharing at least some fundamental background ontologi-  
21 cal structures—that is, they must relate to reality in similar ways. Formal  
22 schooling tends to be the most effective way of assuring this; radical resig-  
23 nification usually takes place in instances where such ontological synchro-  
24 nization is absent, and where cultural differentiation is more pronounced.

25 The ambiguity, abstractness and rootlessness of scientific forecasts give  
26 them great latitude of interpretation. Social and cultural factors, in the con-  
27 text of use, can deeply transform the configurations of visibility around the  
28 forecast—lending them to other, unexpected forms of collective imagina-  
29 tion about the future. The perception of risk is pragmatically oriented, as is  
30 the perception of opportunity. Therefore, people will not consider the full  
31 range of probabilities present in a forecast, but select more salient elements,  
32 according to their practical needs, and may disregard all other aspects of it  
33 (Briones Gamboa 2009). This can result in a radical transformation of the  
34 nature and purpose of the forecast.

35 One fieldwork incident nicely illustrates this point. Early in my fieldwork  
36 I met, in the municipality of Icó, in the hinterlands of Ceará, a local farmer  
37 and community leader named Martins Ribeiro da Silva, who had a meteoro-  
38 logical poster hanging on the wall of his living room. It was a diagram of  
39 anomalies in sea surface temperature during December 1998, when a strong  
40 El Niño phenomenon was taking place in the Pacific Ocean (Figure 11.3).  
41 He had told me that he, as with all the other farmers in the community,  
42 did not use climate forecasts to plan and carry out his agricultural work.  
43 When asked about the image, he said that he tried to keep as informed  
44 as possible, and that the image was esthetically pleasing. As discussed in  
45 detail in another work (Taddei 2012c), after a few months of fieldwork I  
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Figure 11.3 Martins Ribeiro da Silva and the El Niño diagram on the wall of his house. Photo courtesy of Renzo Taddei.

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1 realized that the diagram indeed did not have an economic purpose or a  
2 purely decorative one but that it was a political statement: by displaying  
3 this meteorological information to all those who visited him, he signaled to  
4 his neighbors that he was able to understand, and therefore to communi-  
5 cate in, the language of the government technicians who constantly visited  
6 the community—a crucial capacity so as to be able to legitimize himself in  
7 his role of community leader. Rather than an economic tool, the forecast  
8 was integrated in Martins’s case as a local political performance.  
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## 10 11 CONCLUDING REMARKS 12

13 Through this analysis of the performative dimensions of forecasting, I have  
14 argued that forecasting is a fundamentally political social action, despite  
15 the fact that the scientific disciplines most dependent on forecasting (meteo-  
16 rology, economics, and even political science) are those that systematically  
17 depoliticize it, focusing exclusively on its technical dimensions.

18 Pragmatic features of forecasting discussed in this text are constitutive  
19 elements of the politics of climate-related uncertainty, both in Northeast  
20 Brazil and around the globe. This chapter suggests that scientific fore-  
21 casts—under certain circumstances, and as they often exist and are used  
22 in western societies (in technocratic, developmentist/modernist contexts,  
23 for instance)—are expedient in attempting to promote centralizing politi-  
24 cal discourses. The alternative to this would be the promotion of inclusive  
25 political contexts not simply reliant on flattening the imagination of future  
26 realities onto totalizing dominant discourses. This is where I see the greatest  
27 research potential, both for the development of environmental anthropol-  
28 ogy and for an anthropological contribution to the contemporary debates  
29 on the climate crisis. In this context, anthropology’s historical defense of  
30 cultural diversity gets reframed into a debate on complexity. Bureaucratic  
31 approaches to the climate crisis tend to reproduce the same flattening of  
32 existential perspectives presented in this text in relation to forecasting, and  
33 this simplification takes the form of advocating the creation of a single  
34 global discourse for the problem through mass education, mass communi-  
35 cation, market mechanisms (such as REDD), and international diplomacy.  
36 Anthropology’s task then, becomes one of inserting complexity into the  
37 representation of the crisis as one of its unavoidable features (Crate and  
38 Nuttall 2009: 396; Peterson and Broad 2009). This is in line with theoreti-  
39 cal developments in anthropology, sociology, and philosophy that point to  
40 the need to construct a new politics of the environment, and therefore a  
41 new politics of climate, over radically new conceptual grounds, in which  
42 the nature–culture dichotomy is transcended and other forms of agency and  
43 engagement with the world are taken just as seriously as those sanctified  
44 by western sciences (e.g. Ingold 2000, 2011; Latour 1993, 2004, 2011). As  
45 Hannah Arendt (1998) warned us long ago, when the technical discourses  
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work to alienate individuals from their own everyday experiences, the conditions for authoritarian solutions—disguised by technocratic rhetoric that presents certain technopolitical views and solutions as imperatives—are fully in place. Their prevention seems not to lie in universalizing access to the scientific discourse but instead in the promotion of inclusive political contexts that do not rely on flattening the imagination of future realities around single dominant metaphors. That would not only oppose epistemological domination but, given that the notion of performativity has much deeper implications, it would also be a movement towards the disarticulation of the *impoverished ontogenesis* (Simondon 2009) brought about by capitalist bureaucracy.

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NOTES

1. Although it could be said that genetics does not use forecasting as often as meteorology or economics, during the inception of the Human Genome Project a series of predictions were produced, many of which, after a decade of research, did not materialize (Hall 2010).
2. Perhaps instead of *future* I could have used use a more neutral expression, like *what comes next* or *the way things are going*, so as to avoid the linear idea of time, prevalent in most western cultures. The same could be said of the term *forecast*: I use it throughout the text in a generic sense, similar to Mark Nuttall’s “storylines for the future” (Crate and Nuttall 2009: 396), and not simply



- 1 in reference to technologically ascertained scientific prediction. Nevertheless I  
 2 will retain the terms *future* and *forecast* first for textual economy, and second  
 3 because one of the analyses developed here deals with the connection between  
 4 scientific forecasting and the notion of time as linear and progressive.
- 5 3. There is excellent material focused on the internal aspects of the field of  
 6 meteorology: Fine (2007) provides an ethnographic description of the profes-  
 7 sional environment where meteorologists operate in the United States; and  
 8 Edwards (2010) presents a historical account of the conceptual and tech-  
 9 nological development of climate sciences, touching on some of its politi-  
 10 cal implications, to mention just two. Crate and Nuttall (2009) present a  
 11 valuable discussion of how, in public policy debates on adaptation to cli-  
 12 mate change, the dominant naturalistic scientific approach could profit from  
 13 engaging with anthropological knowledge.
  - 14 4. At least as regards forecasts and not including other important topics of  
 15 research in this area with different temporal frames, such as crisis response  
 16 and mitigation strategies.
  - 17 5. <http://www.funceme.br/index.php/areas/clima/projeto-downscaling>.
  - 18 6. Totaling around 150 interviews, 550 questionnaires applied to farmers in  
 19 irrigated projects and in other irrigated lands, in 14 municipalities of the  
 20 Jaguaribe Valley; 300 questionnaires applied to rain fed agricultural produc-  
 21 ers in six municipalities around the state; and 100 questionnaires applied to  
 22 state agronomists and hydrologists.
  - 23 7. For a full discussion about the roles and performances of rain prophets in  
 24 the region, see Finan 1998, 2001; Lemos 2000; Martins 2006; Montenegro  
 25 2008; Pennesi 2006, 2007a, 2007b; Taddei 2005, 2006, 2012b.
  - 26 8. In 2009 the local official poverty line was defined as roughly at \$1.6 (U.S.)  
 27 per person per day (IPECE 2010: 68).
  - 28 9. The annual meeting of rain prophets in Ceará, organized by local business-  
 29 people, obliges the prophets to perform in a markedly different way compared  
 30 with the traditional situation of these prophets interacting with members of  
 31 their local communities. See Taddei 2005, 2006, and 2012b for a discussion  
 32 of this phenomenon.
  - 33 10. See newspaper O Povo. *A Funceme do Cesar Cals*. April 29, 1997.
  - 34 11. See newspaper Diário do Nordeste. *Vende-se (Coluna de Regina Marshall)*.  
 35 April 4, 1997; newspaper Tribuna do Ceará. *Para que a Funceme?* April 28,  
 36 1997.

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