

## The Multifaceted Nature of Organisational Coping: The Case of Climate Change

### ABSTRACT

Climate change represents complexity in that events resulting from climatic changes can be concurrently abrupt and persistent. They can be simultaneously short-lived and decades long. Such complexity can push organisations beyond their coping range. Leveraging the sensemaking literature, our study explores how dairy farmers in New Zealand coped with drought conditions to the decade ending in 2014. By relying on interviews and thematic analysis, contrary to many previous studies, our findings suggest that actors relied on heterogeneous forms of sensemaking to cope: 1) coping through immersion; 2) coping through detachment; and 3) and coping through deliberate action. We also discovered that sensemaking was not limited to individual actors, but rather *sensegiving* was received from macro, external actors; namely, other farmers. Important external actors such as climatologists, meteorologists and scientists were discounted. The findings offer new insights into how organisations cope with climate change and we describe opportunities for future research.

**Keywords:** Climate change; natural environment; qualitative research; sensemaking; strategy

### **The Multifaceted Nature of Organisational Coping: The Case of Climate Change**

Sensemaking is a process of interpretation whereby individuals enact meaning of ambiguous, equivocal, or confusing events to cope, restore order and/or facilitate change (Colville et al., 2016; Weick et al., 2005). The sensemaking perspective has had immense influence on the study of organizations (Sandberg & Tsoukas, 2015). For example, a key facet of the perspective includes the application of sensemaking to studies covering a wide range of events, which include accidents, crises, disruption, identity construction, patient care, and strategic change, among others (Sandberg & Tsoukas, 2015). Further, the factors that influence sensemaking remains a critical area of study. The view is that not only are events central, but also that sensemaking efforts do not take place in a vacuum but rather are shaped by factors (e.g., context, language, cognitive frameworks, emotion) implicated in sensemaking situations (Weick, 1995). In both of these cases, the study of sensemaking processes are largely subject to individual actors (e.g., front-line employees, middle managers, top executives) inside of firms and how they interpret and make sense of “disruptive ambiguity” (Weick et al., 2005, p. 413). Yet, such approaches may be limiting (Sandberg & Tsoukas, 2015).

In their work, for example, Whiteman and Cooper (2011) elaborate on the idea of *sensegiving*—an extension and complementary perspective on sensemaking processes (Gioia & Chittipeddi, 1991; Rouleau, 2005). Sensegiving relates to how individual actors in *teams* engage in sensemaking processes. However, because individuals interact and interface with other members, their individual sensemaking processes are linked and bidirectional. According to Gioia and Chittipeddi (1991: 442), such ‘collective’ sensegiving occurs when actors attempt “to influence the sensemaking and meaning construction of others toward a preferred redefinition of . . . reality.” Hence, when teams within firms attempt to make sense of events, both sensemaking and sensegiving can occur. In fact, there is evidence to suggest that

sensegiving does influence the ability of teams (and individuals within the team) to effectively make sense of events (e.g. Rouleau & Balogun, 2011; Sonenshein, 2010).

We believe there are potentially two limitations with these noted approaches. First, sensemaking triggers are believed to be dependent upon events (Sandberg & Tsoukas, 2015; Weick et al., 2005). However, a critique of the research approach is that most studies tend to investigate and rely on major one-off or unique events (Sandberg & Tsoukas, 2015). Yet, much of organizational life is routine and ongoing (Feldman, 2000; Turner & Rindova, 2012). Thus, scholars theorize that sensemaking can be more fully considered as a continuous process rather than one that is episodic—triggered only by on-off or unique events (Giephart et al., 2010; Patriotta & Brown, 2011; Maitlis & Christianson, 2014). Here, sensemaking can be multifaceted (Guiette & Vandenbempt, 2016; Sandberg & Tsoukas, 2015; Tsoukas, 2010), where actors engage in potentially many forms of coping rather than only exceptional coping in times of crisis. Second, much research examines firms and the actors and teams *within* these firms as the focal interest of sensemaking and sensegiving processes. Some suggest this approach is too limiting (e.g. Brown et al., 2015; Sandberg & Tsoukas, 2015; Weber & Glynn, 2006). Firms operate in macro-environments including larger community, social, and institutional contexts (Brown et al., 2015; King, 1995; Weber & Glynn, 2006). Upon review of calls for the advancement of the sensemaking perspective (e.g., Brown et al., 2015; Sandberg & Tsoukas, 2015), clearly, much work on the macro-environment remains.

To advance the literature, we study the natural environment and, specifically, climate change. Climate change has been referred to as a ‘super wicked’ issue (Campbell et al., 2019) and one of the greatest challenges of the 21<sup>st</sup> century (Howard-Grenville et al., 2014). Climate change is complex in the sense that events resulting from shifting patterns in the climate can be abrupt, for example, as in an extreme heat wave (Boude & Laroche, 2009). Alternatively, a preeminent feature of climate change relates to time and the unfolding of events can continue

over decades, such as rising temperatures or reductions in annual rainfall (Slawinski & Bansal, 2012). Hence, climate change is bringing about abrupt and persistent events concurrently. Further, climate change is a natural phenomenon that is boundary-spanning, where the locus of attention includes individuals, organizations, communities, regions, and nations (Giddens, 2009; Levy & Egan, 2003; Orr, 2006). Given the unfolding and boundary-spanning nature, studying climate change allows opportunity to more deeply explore theory by factoring the potentiality of multiple dimensions of sensemaking and sensegiving from the macro-environment.

Our study makes a few specific contributions. First, coping with an event that may unfold or last over a long period of time raises issues with respect to sensemaking practices. That is, extreme or one-off events tend to be abrupt and short lived (Brown et al., 2015; Sandberg & Tsoukas, 2015). They are largely sudden and unexpected. In the case of climate change, while an event can be abrupt and short lived (e.g., extreme heat wave—see Boudes and Laroche, 2009), events like droughts can last for years or even a decade. We seek to advance theory by exploring the debate around sensemaking as exceptional, triggered by rarer cues or in times of crises, versus sensemaking as something that is more ubiquitous and even heterogeneous (Guiette & Vandenbempt, 2016; Sandberg & Tsoukas, 2015; Tsoukas, 2010). We do this by examining dairy farmers in New Zealand confronted with drought conditions to the decade ending in 2014. By doing so, our research seeks to uncover the extent to which actors ubiquitously cope with the natural environment and changes therein.

Second, climate change is unique in the sense that events and effects are multiscale, impacting the biosphere, governments, individuals, and organizations. Further, climate change has been discussed globally for decades, is steeped in extensive research (e.g., IPCC studies), and remains highly topical (Campbell et al., 2019; Howard-Grenville et al., 2014; Wright & Nyberg, 2012). Hence, climate change spans stakeholders and boundaries. Following Brown

et al. (2015), the macro-level environment therefore takes on importance. By the macro-environment, we mean actors external to the firm (e.g., community-based actors, institutions, suppliers, actors in other firms). We theorize that when events affect organizational life in relatively the same way across *multiple* organizations, external coping mechanisms more readily come from *like* others rather than broader macro actors. We speculate that other actors with familiarity and similarly embedded experiences are accorded greater levels of understanding and trust, and therefore sensegiving is likely to be restricted to ‘close’ macro (external) actors.

Lastly, we make contributions to climate change research. Policy-makers whose mandate is to assist agricultural industries to respond to climate change will benefit from understanding how farmers make sense of drought conditions and engage the macro-environment. Farmer sensegiving from knowledge that they have about local social relationships in communities is a valid source of knowledge for implementing organizational change—acknowledging strong links in the management capabilities of abrupt or continuous change—in response to extreme weather events associated with climate change. Practitioner knowledge of local ecosystems, including weather and social patterns, is a useful source of information for policy makers pertaining to the management of natural resources at the relevant scale for business inputs, outputs, and continuity in rural communities.

## **BACKGROUND**

### **Sensemaking**

Broadly, sensemaking is a process whereby organizational actors attach meaning to events in order to resolve the uncertainty surrounding them (Weick et al., 2005). As these events occur, they often require action (and sometimes immediate action), which simultaneously forms the basis for sensemaking and affects how well the situation is managed. The less adequate the sensemaking processes directed toward the event, the more likely that

organizational actors will not be able to manage the effects successfully (Sandberg & Tsoukas, 2015; Weick, 1988). Of central focus, then, are events in organisational life (Weick et al., 2005).

Events are episodes that interrupt organisational activity such that order needs to be restored or change made (Weick, 2001). Although the types of events can be infinite, much of the literature tends to focus on ‘severe’ or ‘crisis’ events. Examples include Bophal (Weick, 1988), the Columbia space shuttle disaster (Dunbar & Garud, 2009), the Santa Barbara disaster (Gephart, 1984), the collapse of Barings Bank (Brown, 2005), the Piper Alpha disaster (Brown, 2004) and counter-terrorism operations failure in the UK (Colville et al., 2013). Other studies explore ‘minor’ events such as leadership development initiatives (Bolden & Kirk, 2009), collective turnovers (Bartunek et al., 2008) and the reliability of patient care (Blatt et al., 2006). A common theme in most of these cases is that researchers tend to focus on a bounded point in time. In other words, the locus of attention is on an event that occurs in an immediate or one-off point in time, and firms engage sensemaking processes to retrospectively gain meaning and restore order or initiate change. Some scholars have been critical of this approach.

According to Sandberg and Tsoukas (2015), studying events that are ‘exceptional’, ‘unique’ or are cross-sectional are too limiting. In fact, there is an argument that much organizational activity is ongoing and routine and events are not necessarily one-off (e.g., new product failures can occur on a regular basis) (Patriotta & Brown, 2011; Turner & Rindova, 2012; Maitlis & Christianson, 2014). Echoing this perspective, Gephart et al. (2010: 281) call for “continuous” sensemaking, while Maitlis and Christianson (2014: 67) call for “ongoing” sensemaking. Sandberg and Tsoukas (2015: S22) suggest that sensemaking should be seen as “ubiquitous rather than exceptional”. In our study, and as we note below, while climate change events can be ‘one-off’, ‘major’ or ‘extreme’, paradoxically, they can also be continuous and

unfolding over long periods of time (Slawinski & Bansal, 2012). We believe this gave us opportunity to explore more fully the possibility of ubiquitous sensemaking processes.

The second key aspect important to our study are the factors influencing sensemaking. Factors influencing sensemaking include context (e.g., immediate action context), language (e.g., discourse, rhetoric, stories), identity (e.g., personal identity), cognitive frameworks (e.g., cultural templates), emotions (e.g., negative emotions), politics (e.g., firm hierarchies), and technology (e.g., internet). Considering these factors, ultimately, sensemaking is performed by individuals producing discursive accounts (Cornelissen, 2012). Other researchers have taken a more expansive approach, where individual actors *per se* are not the sole focus, but rather individuals in teams, where so-called ‘collective’ sensemaking occurs through interactive sensegiving (Whiteman & Cooper, 2011). In fact, sensemaking is inherently social (Maitlis, 2005). Yet, collective sensemaking (including sensegiving) tends to be derived at the micro-level. Our view is that firms are not isolated and have to interact with broader macro-environments, which, in theory, may facilitate sensemaking processes via sensegiving from external actors. As we will demonstrate, we believe climate change events are likely to trigger sensemaking and sensegiving efforts that include not only internal firm actors, but actors in the macro environment, or those external to the firm as well.

### **Climate Change: A Temporal, Shared Event**

In terms of complex environmental challenges, climate change is believed to be one of the most prominent (Wright & Nyberg, 2017). Climate change occurs when the statistical distribution of weather patterns vary, and these variations are sustained for an extended period of time (IPCC, 2007). Climate change can occur at the global, regional, and local spatial levels, as well as different time levels (IPCC, 2007). While climatic conditions have varied throughout history (Pierrehumbert, 2010), recent scientific evidence suggests that since the mid-1970s, the global land surface temperature has warmed at a rate about twice the ocean surface temperature

and at nearly twice the rate of that of the previous 100 years (IPCC, 2007). Further, global rainfall patterns are changing from long-term averages, with increases or decreases depending on the location (IPCC, 2007). Causes of climate change vary, including factors such as biotic processes, variations in solar radiation, plate tectonics, and volcanic eruptions. More recent views largely focus on anthropogenic emissions of greenhouse gases, or human-induced climate change (IPCC, 2007).

As the climate changes, there is a view in the literature that climate-related events consist of a range extreme events. These range from ‘simple’ extremes, such as a heavy rainfall event or a day of extreme heat, to complex extremes, such as cyclone, drought, or ice storm events, to unique extremes such as the collapse of major ice sheets (Linnenluecke et al., 2012; Trenberth et al., 2007). While each of these may be considered one-off events, paradoxically, a preeminent feature of climate change is time (Slawinski & Bansal, 2012). For example, some experts believe the severest effects of climate change could be 50 or more years away (IPCC, 2007). Alternatively, records indicate that temperature and rainfall changes have generally been gradual and slowly unpacked—until more recently. In this sense, the warming of the planet is intensifying as time continues, which is believed to be leading to more frequent and extreme weather events (IPCC, 2007; Winn et al., 2011). Further, climate-related events, such as droughts, can occur over long periods of time, such as the ‘Millennium’ drought in Australia, lasting from roughly 2001 to 2011, or the series of severe and long-lasting droughts occurring over the past few decades in the Western Cape of South Africa. Following scholarly perspectives (e.g. Linnenluecke & Griffiths, 2012; Linnenluecke et al., 2012), climate change is therefore believed to bring about abrupt and persistent events *simultaneously*, which may stretch a firm’s coping range.

Climate change is a highly complex, multi-scale phenomenon with a range of potential outcomes and impacts across multiple temporal and spatial scales. Here, changes in the natural



environment unfold and continue to unfold independent of humanity's social constructions (Whiteman & Cooper, 2011). In this sense, we theorize that coping with climate change relies more on ubiquitous rather than exceptional sensemaking. Further, events such as droughts or other extreme weather events are *not* tied to any specific firm. That is, a drought, for example, effects multiple firms, actors, and other entities (e.g., governments) simultaneously. In essence, climate change is an event where “[t]he issues involved are too extensive and too many-sided to be coped with by any single organisation, however large” (Trist, 1983: 27). We believe climate change events are ‘shared’ and our view is that coping processes may lie outside the boundaries of any single firm. Here, we theorize that firms rely on actors in the macro environment to cope, which we believe is a role that external sensemaking plays.

### **Research Setting**

Natural resource-based industries are unique in that due to public interest in land use, water quality and aesthetics, they are managed by actors within a group of firms with high levels of regulation (Bansal & Hoffman, 2012). Complexity arises from the confluence of natural systems—constitutive and immutable patterns, extremes, and persistent effects which span time and distance; and human systems, whose governance models attempt to distribute the benefits and costs of natural resources among firms and the general public (Bansal & Hoffman, 2012). Thus, the firms in an industry extract economic rents from ecological material, such as water and soil minerals, by transforming it into products in the form of proteins and energy for human consumption. There is environmental disruption, some of which is relatively benign and can be managed immediately, directly and in a confined space, for example, by replacing utilized elements with fertilizer. But there are other interactions with the natural environment that have not been integrated into economic systems, have long-term feedback effects and span national boundaries, for example carbon pollution, which is believed to cause various climate change events (IPCC, 2007).

In our case, we chose the dairy farming industry in New Zealand. Dairy farmer responses to climate change in New Zealand reflect the historical context of natural-resource agricultural systems. The dairy industry is the largest part of the New Zealand economy by some margin. New Zealand is one of the largest dairy exporters in the world and in fact, Fonterra, the largest producer, accounts for approximately 30 percent of the world's dairy exports. Further, the physical science of climate change has been linked to impacts on the dairy industry in New Zealand (Rosin et al., 2008). There has been an increase in the number of droughts in New Zealand in the past 15 years. While these events do not necessarily confirm century-long trends, the string of droughts provides an opportunity for research to investigate how farmers make sense of increasingly frequent climate change events over a relatively long period of time.

For this study, we selected a period of time sufficient to examine sensemaking. During the 2003–2013 period, New Zealand farmers experienced an increase of time spent in drought conditions (Clark et al., 2011; Clark et al., 2012). Surveys of farmers showed that, while many sources of information on weather conditions and climate change were available, they did not find these sources useful (Ministry of Agriculture and Forestry, 2009; Ministry of Primary Industries, 2019). We address the likely reasons for their lack of confidence later in our findings.

## **METHODS**

### **Sample**

Selection criteria were informed by Lincoln and Guba's (1985) guidelines for purposeful sampling (we explain our procedure in more detail below). In many cases, participants were recommended by experts or by other farmers whom we had interviewed. The final sample consisted of 38 dairy farmers operating in three regions in New Zealand: 14 residing in the Waikato region; 17 from the Northland region; and 7 were located in the

Canterbury region. Each region had experienced the same drought conditions. Age of participants ranged from the 30's to the 60's. Thirty six of the participants were owner/operators, while two were sharemilkers (i.e., one who works on another's farm for a share of the profits). The majority had at least a secondary education. Lastly, 12 farmers were women while 26 were men.

### **Data Sources**

Data collection occurred over a two-year period and involved multiple forms. First, to understand natural environmental conditions in the period under study, we gathered information from many reports in New Zealand's agricultural sector. We collected data on drought scenarios (Clark et al., 2011), climate scenarios (Reisinger et al., 2014; Reisinger et al., 2010) and an economic model of drought impact on farms in the Waikato region (Butcher & Ford, 2009). Our attention to studies of ecological change was guided by our prior reading of many journal articles, and company and industry publications on New Zealand's agricultural sector (Cooper et al., 2013; Cooper & Rosin, 2014; Fonterra Cooperative Group, 2012a, 2012b; Greenpeace New Zealand., 2017).

Second, our preliminary research enabled us to select, using purposeful sampling (Denzin & Lincoln, 2011), 15 industry experts with professional knowledge of pasture-based production systems, weather and climate change, with whom we were able to conduct preliminary informational interviews. Six interviewees were professors employed at universities. Six were executives working in New Zealand's agricultural Crown Research Institutions AgResearch and New Zealand Greenhouse Gas Research Centre; one was the chief executive of a regional council in a major dairy farming region; two were senior managers from Dairy New Zealand; and four worked in the private sector—one for a dairy processor, one for an agricultural technology company and two were farmers. Expert interviews were conducted either face-to-face or via Skype, took 30 to 110 minutes each and the audio was digitally

recorded. In addition to the audio recordings, 42 pages of reflective research notes were taken in a journal. These interviews improved our understanding of droughts, floods, wind events and extraneous factors, and their effects on agricultural industries such as dairy farming.

Third, to grasp the richness of the surroundings in which our focal informants work and live *in situ* (Angrosino, 2007), the first author drove 2,600 kilometres to conduct 38 interviews with farmers in their places of work (about 1-2 interviews per day) across three regions. Purposeful sampling, including recommendations from our expert interviews and snowball methods, were employed to secure our participants. Interviews lasted between 40 minutes and 2.16 hours. About 60 pages of journal notes with ad hoc photographs during the interviews and over 200 pages of reflective notes in a research journal post-interview were collected. Reflection on these materials sometimes resulted in a second call to the participant, requesting more information, or clarification of elements of the original conversation. About 34 hours of recorded interviews were transcribed into 257,000 words. Two interviewees did not agree to be recorded, and in these cases research notes were taken. The interviews were semi-structured, so that possible extra questions could be added spontaneously according to how each interview progressed (Rowley, 2012). Although some questions were slightly altered after the first few interviews, they remained consistent in substance.

### **Data Analysis**

Data analysis was completed in three stages. In Stage 1, expert interviews were analysed to inform the context of the larger study and an appropriate sample. In Stage 2, farmer interviews were analysed. We conducted thematic analysis (Braun & Clarke, 2006) to explore patterns and establish a data structure. In Stage 3, the rigour and trustworthiness of the data was examined.

***Stage 1: Expert interviews informing the larger study.*** In Stage 1, the interviews with 15 experts on New Zealand's agricultural sector were analysed. As noted, in order to prepare

for conversations with experts we reviewed reports on New Zealand's agricultural sector, peer-reviewed or otherwise, and collated these by industry topic. After conducting the interviews and reflecting on insights and themes within them in a research journal, we followed a process of data reduction (Strauss & Corbin, 1998) by developing criteria for choosing a resource-based industry that would best serve our purposes. A determination was made that for the purposes of our research, the dairy industry was suitable. The dairy industry was suitable because of: 1) large impact on the New Zealand economy; 2) large number of participants which helped ensure adequate sample size; and 3) experience with climate events (i.e. drought).

*Stage 2: Dairy farmer interviews and observations.* Interviews were orthogonally transcribed and entered into NVivo 10. Further comparisons with digital photos recorded in the field journal, a research journal, the expert interviews and industry reports added to the rigour of our data analysis. We followed Braun and Clarke's (2006) processes of thematic analysis. We engaged in reflective and reflexive analysis, moving back and forth in a dialectic inquiry among the coders. Discrepancies between a first and second coder were resolved in inter-coder conversations with these criteria: 1) the priority that farmers gave to issues they raised that were based on open-ended questions and not on 'prodding' which might have inadvertently arisen in the semi-structured interview (Miles & Huberman, 1994); 2) the frequency with which they raised the topics; 3) the emotion associated with topics as recorded in the researcher's journal; and 4) the physical evidence that could be used to corroborate statements (e.g., photos, map of the farm, feed budgeting spreadsheet, accountants' statements or industry reports). After several weeks of initial coding, our analysis resulted in a list of 816 coded passages, which were arranged into nodes and sub-nodes (86).

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INSERT FIGURE 1 HERE  
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Following the initial step, we coded second order, ‘researcher-centric’ codes, to identify patterns and themes from the coded passages. At this stage, we particularly sought patterns at the intersection of ubiquitous and macro-environment sensemaking—the nascent concepts which our study aimed to explore. Through an iterative process of experimenting with different constellations of node descriptions in constructive debates, we developed overarching patterns, themes, and sub-themes. We oscillated between inductively building on concepts derived from the data, and deductively triangulating data. Over time, we refined codes and coding processes, made node descriptions more precise, and agreed to the first-order categories, second-order themes, and aggregate dimensions among the researchers. Figure 1 illustrates our final data structure. Table 1 also provides additional supporting evidence for our findings.

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***Stage 3: Rigour and trustworthiness of the data.*** A number of reports employing quantitative models and surveys were used to triangulate events and sensemaking processes found in the interview analysis. Historical start and end dates reported by official government ministries for drought events were compared to interviewee statements. Similarly, the economic impacts that drought-affected farmers reported were corroborated with aggregate farm business solvency tests from the Reserve Bank of New Zealand (2016). For example, Waikato farm impacts reported by farmers were compared with the factors in an expert report on drought in the same area (Butcher & Ford, 2009). Lastly, select findings of this study were also presented at international conferences. The feedback provided through these forums helped the study to remain theory focused (Patton, 1990), while aiding critical reflection on the methods employed and the assumptions and inferences made.

## FINDINGS

Our objective in this study was to explore how actors make sense of climate change events that might not only be extreme, but persistent. Our view was that actors in natural-resource-based industries, such as farmers, cope with climate change through ubiquitous sensemaking processes. Further, climate change events are not limited to single actors in a single firm, they are shared. We postulated that actors are therefore likely to rely on the macro-environment to cope with and make sense of climate change. Based on our interviews and subsequent analysis, three themes emerged from the data.

In the first theme, we found that climate, weather, and change events related to these dimensions are seen as on-going—if not normal and expected. There was a sense that farmers do not ‘disaggregate’ extreme events or climate change from their daily routine, which we believe is important to understanding their sensemaking processes. The second theme, heterogeneous sensemaking, suggests that farmers engage in a variety of processes to cope with drought. The third theme, insulated sensegiving, suggests that farmers do consider the macro-environment when attempting to cope with drought, yet the external actors they rely on is limited. Below, we describe our findings in greater detail.

### **Climate Change is Continuous**

*Weather and climate change are not one-off events.* We first questioned participants about their general views of the natural environment and how they might relate drought to climate and weather. This line of questioning was an important first step in framing sensemaking processes specific to our context. We found that participants did not seem to disentangle everyday weather with more prominent or recognized features of climate change such as drought or that drought was somehow unique that needed to be managed ‘once’ or relative quickly. For example, one of our participants noted that:

Management [of drought] for me is for starters looking after your pastures, making sure that they're in a good state to grow *all the time* (italics added) (Farmer 5).

Frequently, we found that farmers were more concerned about daily weather than any abnormal effects of climate change, and how to make sense of what to do based on these daily weather conditions. For example, a representative view was one where a reading of the weather on a daily basis—as opposed to the reading of a ‘dramatic’ or one-off climatic event—was critical to day-to-day functioning. Such a perspective was summed up by one participant: “reading the weather dictates most of what you do every day” (Farmer 15).

There was also a perspective that farmers work within unique typologies and micro-climates. In this sense, there was a view that general climate change predictions and long-term weather forecasts tend to be too broad and of little relevance. One participant was quite explicit:

I don't believe the long-range weather forecasts because they're not specific enough to our particular area. It is a problem, you know, that you look at the weather forecast and they say oh you're going to get rain. And you look outside and you see the wind is from that angle and you say nah, it's not going to rain. The rain will come up so far and then will split and it might be 20km away that they're getting rain and you're not. So I like to farm for today and do as much as I can today and worry about tomorrow as it comes along (Farmer 2).

Similarly, some farmers likened their work to biological systems. In our case, biological systems consist of organic and inorganic matter, grasslands and animal health, which are shaped by the natural environment. This includes the weather. Yet, the influence of the natural environments events are not seen as ‘far-off’, but rather occurring daily and in all kinds of climatic variation—exceptional or not. As noted:

To be a farmer is to take control of a biological system and steer it on a steady path through all kinds of [climatic] variation. That's the art of farming (Farmer 9).

Lastly, while we did not get the sense that participants discount the future or what might happen longer term regarding a changing climate, ultimately they have to look after the daily conditions that affect their livelihoods. Perhaps this was best summed up by:



What do you think the first thing every cocky asks each other? How's the weather? That's why farmers always talk about the weather. It's in their make-up. The first question people ask you, "how's the weather?". They're not just talking about the weather because they've got nothing else to talk about (Farmer 4).

*Scepticism that climate change is a 'current' phenomenon.* Climate change has been and remains a global topic of interest. Some have suggested climate change is one of the world's great moral, political and social issues (Howard-Grenville et al., 2014). Further, the world's leading scientific bodies have documented changes in the climate, particularly in the last 100 years (e.g., Australian Academy of Science, 2010; IPCC, 2007; National Academy of Sciences, 2008; The Royal Society, 2010). Yet, interestingly, in our sample general scepticism around climate change was demonstrated. For example:

[Climatologists] say that there's more ice on certain ice shelves and things like that, and you think where is this climate change? (Farmer 17)

In other cases, some questioned to what extent climate change is a recent phenomenon. Such perspectives were demonstrated by the following:

Some of the old farmers say [climate change] happened back in the 70's or 60's. It's just a cycle, aye. Thirty year cycle or thereabouts (Farmer 16).

I'm not a great believer in [these scientific concerns about] greenhouse gases...If you look back a couple of hundred years you'll find this cycle in there somewhere before (Farmer 10).

To be honest I kind of struggle with this changing weather pattern thing because...I am not a full believer in, in the fact that we are having a lot of [climate] change. I think we've always had weather extremes (Farmer 16).

Yet other farmers simply believed that climatic changes are patterns that manifest over periods of time. For example, some farmers spoke of patterns of wet cycles only to be superseded by drought conditions:

So the cycle's, yeah, a wet cycle came in and everybody forgot [about drought] and now it's back to all these drought strategies which is how it was when I started farming (Farmer 8).

In sum, the insights of our first theme suggest that farmers work with the weather every day and have experienced changes in climate first hand. They do not necessarily disentangle

weather from extreme conditions or climate change events such as drought. Such aspects are intertwined in their perception. There was scepticism regarding climate change science and participants did not seem to elevate drought as a unique event or something that will taper off then recur in due course. This is because they believe that the climate is always changing and cyclical, and patterns emerge consisting of similar conditions previously experienced. In other words, climate change is not new and is manifestly continuous. Here, cognitive frames appeared to be shaped with respect to how the participants were found to cope with climate change; namely, drought conditions.

### **Heterogeneous Sensemaking**

*Coping through immersion.* When making sense of drought conditions, there was evidence to suggest that immersion in the natural environment was important. Immersion in the natural environment develops coping mechanisms that become routine, non-deliberate, and specific to local conditions. Participants highlighted that making sense of an event like a drought relied on experiencing on-going changes in the natural environment as they related to local conditions and farms. In this way, participants were not necessarily relying on specifically triggered ‘unique’ coping mechanisms due to drought or deliberate or intentional actions, but rather engaged coping mechanisms developed through routine management of natural environmental conditions that are always changing. Participants suggested that coping comes from repeated, daily experience of managing the land and weather that changes on a continual basis. As one participant noted: “To farmers like us that have lived here all our lives and know what the soil is like, we know categorically [what is going on] (Farmer 1)”. Another said that: “[Responding to the weather] is what we’ve always done, so we’ll just keep doing it (Farmer 13)”. Here, coping was dynamically enacted and automatically unfolded. One participant even hinted at coping as ‘subconscious’, noting: “Farmers always talk about and act on the weather. It’s subconscious. (Farmer 4)”.

There was also a perspective that coping through immersion (or absorbed coping) derives from the lifestyle of farming. That is, farming is not a factory or office job where one punches off the clock or leaves at a specific time each day to go home. Farming is continuous and there is a sense that one never really ‘checks out’. Farmers live on their farms. They are resident there. They experience climatic changes regularly and have to manage for survival. Sensemaking is continually remade based upon absorption in unfolding reality. Coping is not triggered by one-off climatic events, but is based on accumulated immersion and experience over time. As one participant noted:

You’re not just going home at five o’clock and that’s the end of your day and you don’t even have to worry about what happens at work from then on. It’s a 24-hour a day job basically (Farmer 10).

The findings suggested that a regular or routine stream of sensemaking—as opposed to that which is episodic—appears to be present. Dairy farmers make their living off the land and must manage the impact of the natural environment continuously. Sensemaking enacted here reflected routine processes without necessarily *deliberately* thinking about how they do them. In other words, an absorbed approach.

***Coping through detachment.*** Another coping mechanism did not appear to be based purely on immersion and routine embeddedness, but rather on detachment. Detached coping arises when actors remove themselves from the ‘subconscious,’ non-deliberate, and spontaneous nature of absorbed coping. Specifically, a relatively strong pattern that emerged was that sensemaking occurs predominately in paddocks. Participants referred to being in paddocks on a daily basis to *objectively* evaluate conditions. Farmers recognise the uniqueness of each paddock and will traverse them daily to gather information and understanding is gained through deliberate control. Of particular note of what emerged from the data was the predominance of physical artefacts (e.g., cow and grass conditions, paddocks, typology).

Physical artefacts serve as cues that farmers can objectively assess and learn from. Objective assessment of physical artefacts helps them cope.

By example, farmers take notice of grass, cows and typology, bracketing their importance to milk production. One farmer noted: “It’s attention to detail that makes the difference. And it’s whether people are prepared to do that. You know, it’s watching cows [on a daily basis] (Farmer 10)”. Further:

[You] go out into the paddock and know how much grass is there and how much you are going to feed those animals and what that’s going to do to the production on a daily basis (Farmer 5).

Someone who has managed a farm on really wet peat...and knows how to treat that, is quite good during a very wet winter because they will understand, they will understand wet soils and how to deal with it. A person who has worked on a farm that’s in the middle of the Hawke’s Bay, where it dries out like a desert has a pretty good understanding of how to cope with that environment (Farmer 7).

Grass growth is observed (if not measured) because of its critical importance to the nutritional quality for cows and is related to soil composition and moisture levels. Further, soil moisture levels are vital to productivity and some participants noted that they relied on monitoring devices to actively assess levels. If any of the physical elements necessary to production were being disrupted due to weather or drought, many farmers readily made sense of change because they were objectively assessing these factors on a daily basis, whether through direct observation or measurement. In this way, there was a form of ‘detachment’ in the sense that farmers took a step back and consciously removed themselves from being overly absorbed and subconsciously managing, and demonstrated intentional, or controlling, intervention to cope.

***Coping through deliberate action.*** Being self-aware and reflexive was another means of sensemaking emerging from the data. While there are the aspects of daily immersion and objective monitoring and control, we found that many farmers were demonstrating intentional directedness as well (Tsoukas, 2010). As noted by Tsoukas (2010), deliberate coping involves reflexive practice where actors are aware and intentionally attending to tasks under a subject-

object wholeness. Actors reflect on their doings both in action and in action-presence. In our case, this was particularly noted in prospective planning efforts. For example: “Basically...You’ve got to farm for that drought. You’ve got to plan...for it (Farmer 10)”. Similarly, regarding the drought, “planning and preparation prevents poor performance” (Farmer 2). Others were even more specific:

We monitor our pastures weekly. We go round, do a farm walk and plate metre it. So we have a rising plate and we go round and measure what we have, so we know exactly what the cows are getting. And then for forward planning we can see where the average pasture cover is (Farmer 5).

You can do forward forecasting feed budgets, which give you an indication of how much feed you’re going to be in deficit by. Therefore you can make a decision on what you want to fill it with; how you’re going to do it, what it’s going to cost. (Farmer 17)

Another perspective had to do with early decision making:

People who seem to handle droughts well make decisions early and they make those decisions sort of saying, well, if it continues, you know, what should we be doing now to put ourselves in the best position further down the track? (Farmer 12).

There was also a generational perspective. Many farms are generational, and sensemaking patterns and coping mechanisms are passed down from one farmer to the next, which helps with planning, forward thinking and explicit attention to a purpose in mind for future required action. Hence, the next generation is taught what to expect and how to deal with and plan for adverse conditions, such as extreme weather or drought conditions. They learn from those who have experience with the past, yet can actively reflect and learn for the present and beyond. This was evidenced by:

[Dealing with the weather] has just carried on from a generation to another generation...this is how I was brought up, because my father taught me or my parents taught me (Farmer 18).

In sum, the findings from our second theme suggest that sensemaking processes appear to be ubiquitous. In our case, ubiquity was represented through heterogeneity or multidimensionality. Farmers are immersed in their environment. They are highly embedded

in nature and cope experientially by participation. Farm life is considered ‘never ending’ and a 24 hours a day lived experience. There appeared to be little distinction between drought and sensemaking regarding the normal, daily management of natural environmental conditions. Following Sandberg and Tsoukas (2015: S25), we found that dairy farmers “...go on doing the things they routinely do without deliberately thinking about how they do them”. In other words, sensemaking is absorbed. They also specifically rely on physical artefacts to manage the natural environment to support productivity. In this way, they ‘detach’ from ingrained, non-deliberate and subconscious coping to consciously learn through specific knowledge or information acquisition, resulting in deliberate control over equivocality. We also found that farmers cope through deliberate action. In other words, they are self-aware. They reflect. They are intentional. They plan. They are informed by and learn from family members who know how to deal with relevant conditions. Good farmers systematically prepare and plan for drought through reflexive practice.

### **Insulated Sensegiving**

*Farmers rely on other farmers.* Sensegiving is a concept that extends sensemaking from individuals to teams. That is, individuals within teams who deal with ambiguous, equivocal or confusing events both *make* sense and *give* sense. In our case, we postulated that the scale of climate change events are such that individual actors, or even teams, within a focal firm likely draw on the macro-environment to cope. That is, sensemaking is influenced by sensegiving from actors external to the focal firm. The findings suggested that this was the case. Yet, sensegiving was narrow in scope.

Predominately, there was a real willingness to assist sensemaking processes from ‘like other’ macro actors; namely, other farmers. For example: “...farmers like learning from farmers far more than they like learning from anyone else” (Farmer 13). Others noted that in

order to cope with drought events, the sharing of the experience or receiving feedback from other farmers was important:

The best thing you can do is just go out and talk to other farmers and by talking to other farmers you know that you're gonna be, you're all in the same boat, you're all singing from the same page. Things don't seem as bad as what it does if you're just sitting at home stewing on the fact, a form of depression I suppose. You've got to talk about it [with other farmers] (Farmer 3).

You'll go for a walk around the farm, or you'll take the [motor] bikes and go and visit [your neighbour's] property and just have a look over his farm. And give them some ideas on feedback of whether you think they're doing a good job, or how they could be doing a better job (Farmer 14).

There was also a view that farmers are the 'fabric of society' in rural communities in New Zealand. Many of our participants demonstrated an understanding that the social ties within the community of farmers were helpful during stressful times, such as in drought conditions. To manage natural environmental change, farmers make a series of decisions in order to save the farm they depend on for their livelihood, residence and community relationships. Farm failure is felt not just economically but also in terms of the destruction of social ties. Meeting other farmers (e.g., in the local pub or community centre) was helpful for reducing stress in the face of climate change and experienced drought conditions. The content of conversation appeared to spur early detection of weak cues and prompt decision-making ensued, making an important contribution to sensegiving and sensemaking processes. Such views were summed up by:

You've got to talk about [drought] and going to groups like discussion groups is the best forum to do it. You've also got to become a part of the community and most farming communities will always have something at the hall for instance, you know, once a month. For instance...every Friday night we have, just starting up again now, we have indoor bowls and card evenings where all the locals come down and have a drink with the neighbours and your friends. (Farmer 3).

***Distrust of non-farmers.*** Many participants recognised that making sense of the natural environment and related events, such as a drought, could be found in sensegiving from other actors. Yet, these sensegiving processes tended to be *selective*. Some participants noted how

many macro actors seem to have little experience on farms or with farming, and therefore are largely discounted with respect to sensegiving. This was particularly noted among non-farmer sensegiving. For example:

When the salesman talks [farmers] start talking amongst themselves. They're standing in a paddock full of grass, they can see what I'm talking about. Whereas a salesman will stand up and talk about it and he's not been there and done it, if you get what I mean (Farmer 5).

Most farmers aren't interested in big, you know, sort of big full lectures as such. Yeah, it's got to be done at farmer to farmer levels. Small [farmer] groups (Farmer 12).

In other cases, participants noted that they dislike—if not distrust—of macro actors such as weather forecasters:

Because farmers can always be a little bit sceptical about the weather forecasters. During the drought you'd read, oh we're gonna get some rain this weekend and then by the time the weekend comes it's sort of scattered showers, and by the time the weekend actually comes it's sort of like nothing [they predicted]...So you think you bloody bastards, you know, Jim Hickey, you arsehole (laughter). So my experience is that most farmers take the weather forecasts with a grain of salt and especially the long-range stuff. I don't know any of my friends that have any big input into the long range (Farmer 3).

Largely, this distrust of weather forecasters is because participants believed that their predictions are too general and that the individuals making these forecasts have little experience managing farms or really understand the impact that weather has, on a daily basis, farmers' livelihoods.

Similarly, although perhaps surprisingly, participant expressed little regard for climatologists. Nearly all farmers viewed climate forecasts of increasingly severe extreme weather events in the coming years as having little consequence:

I take them [climate forecasts] all with a pinch of salt. I think a lot of those times those scientists don't even look out the bloody window sometimes. You've sometimes got to look out the window and see what the weather is rather than look at their satellites (Farmer 3).



Farmers tended to discredit both weather forecasts and climate change predictions because, based on their own experience, they believed short-term forecasts were so often wrong. Further, the view was that scientists mainly reside in comfortable offices pouring over data and running ‘what if’ experiments, while having little experiential knowledge of farming practices and the daily weather conditions that must be managed. There was almost a sense that scientists tend to be bearers of ‘doom and gloom’ and yet farmers believed that they nonetheless carry on managing their livelihoods, earning profits and making societal contributions.

In sum, our final theme suggests that participants were not isolated, yet were insulated. That is, farmers did rely on the macro environment and macro actors to receive sensegiving. They did not engage in sensemaking on their own but rather openly engaged with other farmers. Other farmers’ sensegiving appeared to offer a non-judgemental way to ‘test’ their predominant detachment in making sense of climate change and, more specifically, drought. In this way, we believe, farmers were more deliberately coping through what Hernes (2014: 118) refers to as a “referential totality”, or a integration of the experienced living present in light of a greater wholeness of being in the world; in our case, in the world of farming, other farmers and farming communities. There was also a sense that engagement with other farmers aided detached coping in the sense that talking to other farmers allowed both parties to step back, take a breath and objectively receive information that was valuable to making sense of climate change. At the same time, however, reference to the macro environment largely excluded non-farmers. Non-farmers were perceived as lacking experience, relevant understanding of weather and climatic change impacts to farming and were seen as too far removed from reality; hence, their potential as sensegivers was largely dismissed.

## DISCUSSION

### Contributions to Sensemaking Debate and Theory

*Rethinking sensemaking?* Major reviews of sensemaking acknowledge that the concept has had a significant impact on the understanding of organizations (e.g., Brown et al., 2015; Guette & Vandenbempt, 2016; Sandberg & Tsoukas, 2015). Yet, these same reviews surface limitations and suggest ways to advance the study of sensemaking. We believe there are two prominent pathways that have surfaced. First, sensemaking has been criticized as being too focused on the exceptional. Second, sensemaking actors are largely viewed as those residing within well-defined organizational boundaries, such as firms, whereas the macro environment has been relatively ignored as a potential arena for *sensegiving* activity.

In the case of exceptional sensemaking, much emphasis in the literature is on a retrospective nature that accounts for one-off or unique events from which firms attempt to enact meaning to restore order or enable change. However, sensemaking triggered by various one-off or unique events may be inconsistent with actors' experienced reality. In their assessment, Guette and Vandenbempt (2016) propose that organisational actors are more likely to engage in three types of sensemaking. More specifically, they propose: 1) absorbed coping; 2) detached coping; and 3) mindful coping.

Absorbed coping relates to sensemaking through immersion and experience that is 'non-deliberate', 'unintentional' or 'subconscious', unfolding spontaneously through practical coping mechanisms learned from daily routines (one is not aware to be absorbed in activity). Detached coping is sensemaking that considers equivocality as the exceptional, and rather engages in intentional, or controlled, intervention to reduce ambiguity and complexity (one is not aware s/he is detached from reality). Mindful coping is sensemaking that "interrupts automatic patterns of conditioned behaviour whereby practitioners become aware of their predominant detachment in making sense of complexity" (one is aware of the quality of

awareness) (Guiette & Vandenbempt, 2016: 90). Adding to this perspective, Tsouakas (2010) describes deliberate coping. In deliberate coping, “subject-object polarity emerges and...is orientated towards...activity through mental states causing deliberate actions” (Tsouakas, (2010: 52). Tsouakas (2010) largely relates deliberate coping to strategy-as-practice and strategy making as a coping mechanism.

In our study, we relied on a climate change event that spanned time. Specially, a series of drought conditions in New Zealand to the decade ending in 2014. We found that participants in our sample—farmers—seemed to display various or heterogeneous characteristics of sensemaking processes. For example, our participants are highly embedded in their environments. They work and make a living through a dependency on the natural environment. They are continuously paying attention to the weather, in addition to more abrupt or extreme changes, such as a drought. The two are difficult to separate because one simply cannot manage for the day while being removed from coping with more extreme conditions—there is an interdependency. Experience is gained by being immersed in daily environmental conditions. Gained experience and closeness to the land help farmers to cope with drought. There was a sense that many farmers subconsciously cope because they are extremely absorbed in the natural environment daily and over time, and therefore learn to cope by on-going and immersed participation. We found further support for this perspective in the fact that most of our participants did not seem to distinguish climate change or drought as something ‘exceptional’ or ‘unique’, but rather as an expected or cyclical pattern in the natural environment and in the life of farming—something they had to learn to cope with continuously. Hence, following Sandberg and Tsoukas (2015) and Guiette and Vandenbempt (2016), our findings suggested the presence of sensemaking grounded in absorbed coping. Yet, analysis suggested broader findings and sensemaking patterns.

More specifically, in addition to their embedded and immersive experience that enabled absorbed sensemaking, the participants also demonstrated detached coping. Detached coping relies on sensemaking processes where actors intentionally reflect on actions anticipatively or retrospectively (Guiette & Vandenbempt, 2016). They seek to manage or control intervention by reducing ambiguity along the way. In our case, we believe reduced ambiguity was witnessed in the following way. The participants heavily rely on physical artefacts—objective cues—to make sense of the environment, to filter lived experience and to cope with drought. Several farmers noted how they daily and intentionally observe cow health, feed levels, soil condition, grasses, water and monitoring devices, among others, to make sense of the weather and the effects of climate change (i.e., drought) on their livelihoods. By doing so, they were able to ‘chunk’ (Guiette & Vandenbempt, 2016) sensemaking steps and reduce ambiguity on a regular basis to manage through the drought. In this way, the use of physical artefacts are filters, which we believe farmers are using to ‘detach’ and self-consciously step back from ambiguity in order that they can intentionally assign meaning to the phenomenon at hand to better cope (Chia & Holt, 2006).

Lastly, we believe there was demonstration of coping through deliberate action. Farmers who were said to handle the drought best were those who did not necessarily repeat what seemed to work in the past, rely on non-deliberate, subconscious action or simply react after something did not work. Rather, they experimented cognitively and vicariously through planning ahead (Tsoukas, 2010). They augmented feedback-based control and learning processes with anticipatory feed-forward processes (Schulman, 1993). There was an openness to new information and appreciation of multiple interpretations and perspectives from others. Farmers demonstrating deliberate coping seemed to deal with drought conditions through both anticipation and adaptive reaction. In other words, there was reflexive practice (Guiette & Vandenbempt, 2016; Tsoukas, 2010).

Our study resonates with reviews of the sensemaking concept (Brown et al., 2015; Guette & Vandembemt; 2016; Sandberg & Tsoukas, 2015). Specifically, there is noted concern regarding the overreliance on exceptional sensemaking and one-off or unique events in organizational life. To use a metaphor, consider professional sports teams. Typically there is a season through which teams play several games or matches ('events'), ending in a championship game or grand final to determine an overall top winner. We suggest that sensemaking does not occur only after the 'final' game or match—which is a one-off or unique event. Sensemaking occurs before (prospective) and following (retrospective) every game or match (and during a game or match too, e.g., in real-time or at half-time), regardless of a win or a loss—and even in the off season. There is always a new game or match to plan for and play and always the potential of making a championship or final match. Sensemaking does not stop. There is retrospection and prospection.

In our case, a drought event did not seem to be a trigger that initiates exceptional sensemaking. Farmers are always managing for the weather, variations in climate (even expecting them) and they are keenly aware of changes. Rather, farmers seem to rely on a variety of sensemaking processes as they go from day-to-day, month-to-month and year-to-year. Coping is absorbed, detached and deliberate. In this way, we extend the volume of studies that tend to examine one-off or unique events or make theoretical assumptions that firms mainly rely on exceptional sensemaking routines. Following Guette and Vandembemt (2016: 91), we believe we provide here “a perspective on sensemaking that is less focused on being triggered by violated expectations and more focused on the living present of individuals, making sense of their experiences on the go”.

***Macro-environment.*** Sensemaking tends to be studied through actors within the boundaries of an organization. Yet, a few scholars have called for greater attention to the macro environment (Brown et al., 2015; Sandberg & Tsoukas, 2015; Weber & Glynn, 2006). Actors

in the macro environment are believed to shape sensemaking efforts. In their work, Oliver and Montgomery (2008) demonstrate how the Jewish legal profession, via a pivotal 1944 meeting, facilitated shared cognitive sensemaking that changed an organizational field (including its institutional logic), which included growth in the Jewish law profession and Jewish judges, use of Hebrew in courts and the establishment of an Israeli bar. We extend these findings in a few ways.

We drew on the concept of sensegiving (Gioia & Chittipeddi, 1991; Maitlis, 2005; Whiteman & Cooper, 2011) to more broadly explore the dynamics between multiple actors in coping situations. Actors provide sensegiving to other actors, for example, in a team where coping is required among multiple individuals to understand an event (Rouleau & Balogun, 2010; Sonenshein, 2010). Our view is that actors are not limited to individuals or teams within a single firm, but rather include actors in the macro environment as well (cf. Oliver & Montgomery, 2008; Seidl & Werle, 2018). Individual firms regularly engage with external partners, consultants, advisors, government agencies, universities, financial institutions and the like. In other words, sensemaking is a social process not exclusively carried out within the walls of a single firm. Given the scope and dynamic complexity of climate change events, our view was that sensemaking processes would not be limited to the individual farmer on the individual farm who needs to cope. Rather, farmers would rely on macro actors for sensegiving. While we found this to be the case, the findings were somewhat surprising.

The findings suggested that regardless of the fact that substantial information and knowledge about climate change, drought and the weather reside in multiple macro actors (e.g., climatologists, government agencies, scientists, meteorologists), farmers rely mainly on the sensegiving of other farmers, while tending to discount other external actors. There was clear distrust—if not scepticism—of macro actors who are not farmers. We speculate that this may be happening for a few reasons. For one, farmers are deeply embedded in their communities

and were noted as being ‘pillars’ in society—particularly in the New Zealand context where they are among the world’s leaders in dairy production. Because successful farming is so rooted in experience and local conditions, there was a clear sense that macro actors who are neither connected to farming or that are too far removed from the reality of everyday management of the weather and climatic conditions *on the farm* are met with scepticism. Following on, secondly, we speculate that social identity may be enacted here. Social identity theory (Tajfel, 1974) argues that there is tension between in-groups (farmers) and out-groups (other macro actors). In-groups are seen as experts and carry un-replicable experience that is specific to their clique. Biases can form and exist as in-groups perceive out-groups as disproportionately less influential, which can lead to the discounting of their input. Based on our findings, this appears to be the case.

In sum, we lend evidence to theories suggesting that sensemaking is not just exceptional, but rather exists in many forms (Guette & Vandembemt, 2016; Sandberg & Tsoukas, 2015). These forms include sensemaking that derives from immersion and deep experience in an environment. Coping is on-going, spontaneous and subconscious. Sensemaking can also be detached. Here, in our case, actors rely on specific, physical artefacts as cues to ‘step back’ from the mundane and routine nature of coping to more objectively enable sensemaking on a daily basis. Sensemaking that is deliberate is more reflexive and prospective, plans for drought, and is acknowledging and exploring equivocality with intention. That our results seem to point to all of these forms working simultaneously regarding climate change and drought lends credence to theories suggesting that sensemaking is multifaceted in organisational life (Guette & Vandembemt, 2016).

We also discovered that participants in our study do not act alone. They rely on the macro environment, yet in a limited or insulated way. They welcome sensegiving from other farmers, while largely discounting other macro actors who, ironically, may have valuable

information or knowledge that could otherwise better shape sensemaking processes. The finding advances perspectives on the macro environment (Brown et al. 2015; Sandberg & Tsoukas, 2015), suggesting that in the process of coping with events, organizational actors are not isolated among themselves or among the walls of a given firm, but rather receive sensegiving from external actors.

### **Contributions to Climate Change Research**

Climate change is argued to be a defining experience in modern times (Campbell et al., 2018; Howard-Grenville et al., 2014; Wright & Nyberg, 2017). Yet, our participants largely seemed to believe that events arising from climate change are cyclical patterns that have been occurring for a long time, if not centuries, while long-term forecasts carry little relevance to the task of daily managing farms. Such a perspective could be a double-edged sword.

Managing for the day, and coping with ever changing weather—if not extreme weather events—did seem to lead to a degree of resilience. When one’s livelihood depends on the weather and where extreme climatic events can disrupt normal functioning, a certain level of resilience is necessary to survive. However, a lack of credence given to longer-term implications of climate change (e.g., more frequent extreme events) could, alternatively, hinder resilience building efforts to prepare and protect oneself from pending disruption<sup>1</sup>. While a theme did emerge supporting evidence of ‘good’ farmers who seem to prepare through mindful coping, this was not always the case. Given the discounting of macro actors such as climatologists and meteorologists, we believe policy implications are particularly of relevance.

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<sup>1</sup> We note that some farmers expressed that they did not see climate change and the drought conditions they faced as affecting their ability to remain viable as a business during the period under study. However, one wonders to what extent this will remain true into the future as climatic changes unfold and if farmers continue to discount climate science and forecasts.



Belief in climate change science does not appear to be a strongly related to sensemaking processes (as noted in Theme 1). Still, belief in forecasts of increasingly frequent weather extreme events is likely to make sense to farmers in the future, particularly given they had to live through drought events during the decade we studied. The sensemaking processes of farmers suggest that as extreme weather events become increasingly damaging in hindsight, belief may become stronger. When this happens, belief is likely to become an important part of discussions to improve prospection and resilience.

Policy makers could use low involvement strategies to strengthen belief and encourage awareness. Low involvement strategies work for communication with disengaged audiences similar to the group of farmers who dismiss the relevance of climate change science or extreme weather forecasts. Applying low involvement strategies means using only peripheral information such as visual imagery; attractive or highly credible sources; demonstrations that show that anticipating more frequent extreme weather is ‘smart’ and common; and, personalising the threat by showing impacts on rural communities. As awareness builds, surveys to systematically monitor resilience attitudes and practices on farms in vulnerable regions could be crafted to advise policy interventions.

### **LIMITATIONS, FUTURE RESEARCH AND CONCLUSIONS**

There are limitations to our study. First, we studied only the dairy farming industry, which limits generalisability. However, Weick’s (1979) model of organization may have traction in any situation characterised by equivocality. Climate change presents many research opportunities precisely because it requires collective action among actors who view its importance and urgency very differently. We believe the sensemaking perspective is ideally suited to embrace the divergent factions of collective sensemakers whose occupation is to think prospectively (e.g., policy-makers future-proofing an industry or farmers thinking about the next generation). Hence, we suggest future ‘equivocality studies’ in any industry that focuses

on sensemaking routines that both explain organizational success and hamper prospective sensemaking (Stigliani & Ravasi, 2012). We further suggest studies in industries in which dissimilarities in embodied sensemaking (Cunliffe & Coupland, 2012) may deter sensegiving, for example the cooperation between policy-makers, researchers and practitioners in the agricultural, forestry, or fishing industries.

Second, while we cover a decade in our understanding of sensemaking processes, given the nature of our methodology, participant recollection was nonetheless captured in a single point in time. While our approach is in line with Weick (1995), future studies could include longitudinal research methods. Here, researchers could examine cases in the natural environment, yet make repeated observations over time. For example, wine grapes are known to be one of the perennial crops most sensitive to weather (Galbreath, 2011). Future research could examine how actors in the wine industry makes sense of the natural environment (Guthey & Whiteman, 2009) and any relative change, by making repeated observations over an extended period (e.g., 10 years) to further explore coping mechanisms and organizational resilience.

Third, our study is limited to one country. While we have argued that our setting is sufficient to expand our understanding of sensemaking processes in the context of climate change, comparative research is a future research direction. For example, comparative research could be approached in two ways. Future studies could include dairy farmers in other countries to determine whether there are similar sensemaking patterns in the face of climate change events. Future studies could also include different industries within the natural-resource based sector of the same country. In this way, case study research designs (Yin, 2014) could be developed to expand theory that deepens and broadens our understanding of the organisational forms of sensemaking processes.

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## TABLES

Table 1. Themes and representative quotes

Aggregate Dimension	Second-Order Themes	Representative Data
Climate change is continuous	Weather and climate change are not one-off events	Management [of drought] for me is for starters looking after your pastures, making sure that they're in a good state to grow all the time (Farmer 5) Reading the weather dictates most of what you do every day (Farmer 15). Can you fight the weather? No you can't (Farmer 22) To be a farmer is to take control of a biological system and steer it on a steady path through all kinds of [climatic] variation. That's the art of farming (Farmer 9)
	Scepticism that climate change is a 'current' phenomenon	[Climatologists] say that there's more ice on certain ice shelves and things like that, and you think where is this climate change? (Farmer 17) Some of the old farmers say [climate change] happened back in the 70's or 60's. It's just a cycle, aye. Thirty year cycle or thereabouts (Farmer 16) To be honest I kind of struggle with this changing weather pattern thing because...I am not a full believer in, in the fact that we are having a lot of [climate] change. I think we've always had weather extremes (Farmer 16)
Heterogeneous sensemaking routines	Coping through immersion	To farmers like us that have lived here all our lives and know what the soil is like, we know categorically [what is going on] (Farmer 1) Farmers always talk about and act on the weather. It's subconscious (Farmer 4) A lot of farmers don't have any hobbies or anything so everything's just farming and farming and farming and that's it (Farmer 35)
	Coping through detachment	It's attention to detail that makes the difference. And it's whether people are prepared to do that. You know, it's watching cows [on a daily basis] (Farmer 10) [You] go out into the paddock and know how much grass is there and how much you are going to feed those animals and what that's going to do to the production on a daily basis (Farmer 5)
	Coping through deliberate action	Basically...You've got to farm for that drought. You've got to plan and you've got to farm for it (Farmer 10) We monitor our pastures weekly. We go round, do a farm walk and plate metre it. So we have a rising plate and we go round and measure what we have, so we know exactly what the cows are getting. And then for forward planning we can see where the average pasture cover is (Farmer 5) People who seem to handle droughts well make decisions early and they make those decisions sort of saying, well, if it continues, you know, what should we be doing now to put ourselves in the best position further down the track? (Farmer 12)
Insulated sensegiving	Farmers rely on other farmers	Farmers like learning from [other] farmers far more than they like learning from anyone else (Farmer 13) You'll go for a walk around the farm, or you'll take the [motor] bikes and go and visit the guy's property and just have a look over his farm. And give them some ideas on feedback of whether you think they're doing a good job, or how they could be doing a better job (Farmer 14) You've got to talk about [drought] and going to groups like discussion groups is the best forum to do it. You've also got to become a part of the community and most farming communities will always have something at the hall for instance, you know, once a month. For instance we have, every Friday night we have, just starting up again now, we have indoor bowls and card evenings where all the locals come down and have a drink with the neighbours and your friends (Farmer 3)
	Distrust of non-farmers	When the salesman talks [farmers] start talking amongst themselves. They're standing in a paddock full of grass, they can see what I'm talking about. Whereas a salesman will stand up and talk about it and he's not been there and done it, if you get what I mean (Farmer 5) Because farmers can always be a little bit sceptical about the weather forecasters and by the time the weekend actually comes it's sort of like nothing [they predicted] (Farmer 3) I take them [climate forecasts] all with a pinch of salt. I think a lot of those times those scientists don't even look out the bloody window sometimes. You've sometimes got to look out the window and see what the weather is rather than look at their satellites (Farmer 3)

## FIGURES

Figure 1. Data structure

