Worlding the intangibility of resilience: The case of rice farmers in a water-stressed region of the Philippines

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ABSTRACT

Agricultural livelihoods are resilient when capable of enduring and overcoming socio-environmental stressors. The "Sustainable Livelihoods Approach", popularized in development programs frequently targets farmer capacities to cope with and recover from loss and damage by i) enhancing tangible capitals (e.g. ecological, financial) and / or by ii) reducing socio-institutional constraints on entitlements and opportunities to access those capitals. While this two-pronged approach can reduce damage to production or expand the range of livelihood activities available to farmers, it often positions tangible capitals themselves as the central and objective means for building resilience. The recent "social turn" is a call to theorize resilience's intangible and non-material dimensions (e.g. subjective, emotive, and relational forms) as emergent from specific local social-cultural-ecological contexts. Drawing on in-depth field research with rice-farmers in a region of the Philippines experiencing water-related stressors, we analyzed several situated "intangible" narrations of resilience, with a focus on emotive and affective indicators. Farmers narrated their courage to get back up following loss and damage as well as their optimism, faith, and hope for brighter futures in farming. These emotions flowed from their affective relationships with the cosmos (naturalizing life's hardships as cyclical), themselves (strong belief in their own capabilities to persist in times of hardship), and the Divine (faith in God's power to protect hard-working families). Our results contribute to the "social turn" in resilience literature in two ways. First, we highlight affect and emotion as indicators of farm livelihood resilience. Second, we suggest narrations of resilience are constituted through farmers' particular "worldings", or constructions of reality where knowledge, belief systems, and relations, are lived and enacted on an everyday basis. Situating oneself in local contexts can illuminate sources of intangible resilience otherwise hidden from top-down approaches, while engaging "worldings" can help render these intangible sources intelligible within their contexts.

1. INTRODUCTION

A global effort is underway to build "resilient" agricultural livelihoods. Initially developed in engineering, manufacturing, and child psychology, the concept of resilience is increasingly central to intervention at the intersection of development and environmental change (e.g. Alexander, 2013; Barrett & Constas, 2014; Béné, Newsham, Davies, Ulrichs, & Godfrey-Wood, 2014; Tanner *et al*., 2015). Detailed in the literature review below, rural development programs have often focused on building capacities for agricultural activities, or livelihoods, to withstand socio-environmental stressors and persist after loss and damage either by i) enhancing tangible capitals or asset bases (e.g. climate-proofed crop variants, water infrastructure, resource management skills) and / or ii) by reducing formal and informal socio-institutional constraints on peoples' means (entitlements, rights, opportunities) to access those capitals (e.g. Chambers & Conway, 1992; Jones & Tanner, 2015; Obrist, Pfeiffer, & Henley, 2010; cf. Sen, 1981). The International Fund for Agricultural Development (IFAD, 2015), as one example, adopts this two-pronged approach, recognizing that those "who suffer from various forms of marginalization based on age, gender or ethnicity are the least resilient, resulting in, inter alia, more precarious tenure of productive assets and more limited access to financial risk management tools" (p. 2). This framing, crucial in its own regard, views capitals or assets as objective, observable, and universal indicators for building resilience to socio-environmental change (e.g. Jones & Tanner, 2015). Central to this paper we argue, in line with other authors, that assessing resilience primarily using asset-based indicators has the potential to overshadow a broader set of processes that serve agricultural livelihood resilience (Baldwin, Smith, & Jacobson, 2017; Brown, 2014; Cote & Nightingale, 2012; Darnhofer, Lamine, Strauss, & Navarrete, 2016; Dwiartama & Rosin, 2014; Herman, 2015; Marshall, Park, Adger, Brown, & Howden, 2012). This argument can be

placed within an emerging set of scholarship that signals a:

> "…shift away from the notion that the central concepts—adaptive capacity, resilience, and well-being—can be objectively measured by a set of quantifiable indicators to a much more complex, nuanced view that understands them as comprising subjective, relational as well as objective aspects" (Brown & Westaway, 2011, p. 335).

These ideas are core to the recent "social turn" in resilience – a conceptual evolution advocating that context-specific socio-cultural processes complement commonly ascribed indicators and indications of resilience (Brown, 2014). Among other contributions, Cote & Nightingale (2012) argued researchers should derive principles of resilience from specific social-cultural-ecological systems rather than prescribe objective and universalized indicators on people and places. Such an orientation can allow practitioners to "see" alternative dimensions of resilience, including intangible and non-material aspects that exist and inhabit specific worlds (Chambers, 1995; Cote & Nightingale, 2012; cf. Estrella & Gaventa, 1998; Haraway, 1988). This approach and the emergent dimensions of resilience that animate life likely exist outside the perceptual apparatuses of conventional livelihood and resilience schools and thus, serve key roles in resisting hegemonic frameworks at the intersection of development and environmental change. As such, recognizing diverse manifestations of resilience that may not be easily appreciable from Western pathways that ascribe how one becomes "resilient" serves broader goals of decolonizing knowledge and resilience practice.

From our work with smallholder rice-farmers facing irrigation and other social-ecological

stressors in Bulacan (Central Luzon, Philippines), we highlight emotion and affective relationships as key intangible indicators of agricultural livelihood resilience. We understand affect as the transpersonal capacity of a person to be affected through relationships with human and non-human entities, such as the Divine, places, or the land (Anderson, 2006). Relationships are not merely one-way projections of identities or beliefs onto human and non-human components; a relational appreciation animates these components and grants them agency, giving rise to expressions, feelings, and emotions for farmers (*ibid*). Emotions are the physiological experiences and cognitive processes, central to how people interpret, process, and act in relation to diverse lived worlds (Bondi, 2005; Davidson, Smith, & Bondi, 2012; Gregg & Seigworth, 2010; Morales & Harris, 2014; Seyfert, 2012; Sultana, 2015). As we find, farmers' complex emotions of courage, hope, and faith are not simply conditioned responses to some environmental hazard, but emerge from and elaborate their affective relationships and connections with the cosmos, the Divine, and themselves. Critically, we suggest such relationships are constituted by farmers' particular "worlds"—lived realities that are not merely cultural interpretations of *the* environment but alternative ontologies through which knowledge, belief systems, and relations are enacted on an everyday basis[i] (Blaser, 2009; 2013; 2014; cf. Bankoff, 2003; Boelens, 2013; Yates, Harris, & Wilson, 2017). "Worlding", learning from and building upon a situated resilience framework, allows resilience scholars to identify intangible indicators of resilience and crucially, render them *intelligible* within the lived and enacted social frameworks that constitute a person's reality, or world (Blaser, 2013). Worlding endeavours to disrupt the characterization of resilience and vulnerability by Western development scholars as principally involving different types of capital and access-oriented governance arrangements.

Taking a step back, the "social turn" has elaborated that cultural systems, and political and power structures profoundly shape decision-making and resilience-based strategies in socio-ecological systems (e.g. Adger *et al.*, 2008; Curry *et al*., 2015; MacKinnon & Derickson, 2013; Marshall *et al*., 2012). These contributions have pushed resilience scholars to abandon early functionalist models in cultural ecology where the environment was treated as the overriding factor driving social dynamics and organization (Davidson-Hunt & Berkes, 2003; Fabinyi, Evans, & Foale, 2014; Olsson, Jerneck, Thoren, Persson, & O'Byrne, 2015). Recent work highlights socio-psychological factors (Eakin, York, Aggarwal, Waters, & Welch, 2016; Elrick-Barr, Thomsen, & Preston, 2016; Truelove, Carrico, & Thabrew, 2015) and "more-than-human" actants, including people, plants, places, and livelihoods as indicative of, and central to, resilience (e.g. Baldwin *et al*., 2017; Dwiartama & Rosin, 2014; Herman, 2015; 2016). Others including Berkes and Ross (2013) argue for "community resilience", which brings together indicators in social-ecological governance and material capitals, in addition to a range of underappreciated social and psychological indicators that exist at local and granular scales (e.g., social networks, people-place relationships, values and beliefs, and positive outlooks).

Our work in the Philippines directly builds on this work and the "social turn" in general by applying Blaser's (2009; 2013; 2014) worlding framework to resilience scholarship and practice. Recognizing that multiple valid realities exist, a focus on worldings provides a standpoint from which to sense, theorize, and understand historically under-theorized social dynamics, which emerge from lived realities. Worldings is one response to the divides between moderns/non-moderns and nature/culture that has enabled "moderns" to dismiss non-modern conceptions of social-ecological change as "cultural" and corresponding lived practices as inappropriate under

the singular objective reality that exists "out there" (Blaser, 2009; 2013; Sundberg, 2014; Yates *et al.,* 2017; Yeh, 2015). The implications of this framework is that resilience strategies are enacted and lived from the worlds in which people inhabit, and as such there are multiple, not single paths as well as diverse and often unacknowledged means for becoming or being "resilient". Worlding resilience thus seeks to complicate and disrupt powerful circuits of knowledge in state and transnational bureaucracies—exactly those that the "social turn" (*viz.* Cote & Nightingale, 2012) criticizes for universalizing certain realities and determining normative (capital-centric) response pathways (cf. Kuus, 2015; MacKinnon & Derickson, 2013; Peck, 2011; Welsh, 2014). It contributes to broader efforts to decolonize knowledge, scholarship, practice, and broader circuits in development thinking (Theriault, 2016; Yates *et al*., 2017). To begin, we trace conventional thought behind resilient livelihoods theory and practice, with attention to the small subset of scholarship that has thus far served to highlight intangible aspects of resilience, notably in agricultural settings (**Section 2**). We then present our study site and methods (**Section 3**) before moving on to the combined results and discussion informed by the worldings perspective (**Section 4**).

2. AGRICULTURAL LIVELIHOOD RESILIENCE: FROM CONVENTIONAL UNDERSTANDINGS TO THE INCLUSION OF AFFECT AND EMOTION

In the 1970s, Buzz Holling (1973) drew on studies of predator-prey dynamics to theorize resilience as the capacity of an ecological system to withstand and absorb disturbance and retain its structure, function, and identity (cf. Gunderson, 2000; Peterson, Allen, & Holling, 1998). Shortly thereafter, Vayda and McCay (1975) extended Holling's work (1973), suggesting

resilience involves being flexible enough to respond to disturbance and survive (cited in Davidson-Hunt & Berkes, 2003). Adger (2000) later applied resilience to social systems as "the ability of communities to withstand external shocks to their social infrastructure"—a definition we adopt as an end-goal in framing agricultural livelihood resilience practices in our Philippine case (p. 361). Sustainability science and socio-ecological systems research later extended resilience as the transformative capacity of an actor or system to achieve and sustain "desirable" constructs or outcomes, such as continued farm-based livelihoods, under dynamic contexts of environmental change (e.g. Berkes, Colding, & Folke, 2003; Engle, 2011; Folke, 2006; Gunderson & Holling, 2002; Liu *et al*., 2015; Walker, Holling, Carpenter, & Kinzig, 2004). This desired state might be achieved using multiple interwoven pathways, including *ex-ante* (pro-active mitigation, adaptation or transformation) and *ex-poste* (recovery and re-organization) strategies. Overall, resilience marked a clear shift from attempting to eliminate change towards re-organizing human-nature dynamics to deal with the inevitability of socio-environmental shocks and shifting baselines (Folke, 2006). This approach is particularly important under the context of climate change, which has unsettled resource management paradigms predicated on stationarity, certainty, and predictable variation, including for water and water-related hazards – themes central to our interest on resilient livelihoods in agricultural contexts (Falkenmark, 2016; Milly *et al*., 2008; Pahl-Wostl, Jeffrey, Isendahl, & Brugnach, 2011).

While broadly interested in theoretical resilience debates, our particular focus is on the ways that these ideas and constructs are applied to agricultural livelihoods. Chambers and Conway (1992) defined livelihoods as, "The capabilities, assets (stores, resources, claims and access) and activities required for a means of living…" (p. 6). Their definition implies that livelihood

activities and human agency more broadly, arise from and are sustained by multiple assets or capitals (i.e. endowments) and capabilities to access these assets—which are in turn mediated by ecological, socio-political, and institutional contexts (Bebbington, 1999; Ellis, 2000; Leach, Mearns, & Scoones, 1999; Scoones, 1998; Sen, 1981). Chambers and Conway (1992) centre resilience, arguing that livelihoods are sustainable when they "can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation…" (p. 6). In this context, vulnerability might refer to "…the susceptibility to circumstances of not being able to sustain a livelihood" (Adger, 2006, p. 272). From this definition, resilience (and vulnerability reduction), manifested through coping and recovery processes, forms one attribute of what scholarship might understand as a sustainable livelihood.

Similar conceptions of resilient livelihoods were adopted in development interventions by agencies such as the British Department for International Development (DFID), the World Bank, Food and Agriculture Organization (FAO), and the IFAD (Morse & McNamara, 2013; Solesbury, 2003). These organizations drew explicit linkages between productive forms of capital – natural (e.g. secure land access, specific crop variants), human (e.g. resource management training), social (e.g. resource and informational access), physical (e.g. market access, irrigation infrastructure, technology), and financial – and the capacities of livelihood to be resilient or sustained over time (e.g. Asian Development Bank, 2009; IFAD, 2015; World Bank, 2015). Research has since demonstrated that multiple interlocking capitals enable coping and adaptation to mitigate loss and withstand damage (e.g. Dasgupta *et al.*, 2014; Osbahr, Twyman, Neil Adger, & Thomas, 2008; Scoones, 1998; Sok & Yu, 2015). For example, water

pumps and rainwater infrastructure that capture and use interchangeable water sources, as well as displace it, can mitigate impacts of drought and flood. The capacities to access weather-related information through technology or social networks can shift planting times, avoiding temporary environmental shocks. Other work emphasizes that resilience builds capacity to innovate and transform specific components of the livelihood portfolio, which can feedback to complement and support existing (agricultural) livelihood activities (Hussein & Nelson, 1998). The retail and bulk sale of livestock, for instance, can act as a reserve in case of emergencies, helping farmers recover from crop failure and sustain farm livelihood activities over time. Despite the validity of capital assets and access, this approach has received criticism for extending individualism, driving capital accumulation, and consolidating power dynamics—rather than building anti-capitalist ethics, networks, and relationships that protect individuals where asset holdings and distributions might fail or be inadequate (Aldrich & Meyer, 2015; MacKinnon & Derickson, 2013; Taylor, 2015; Watts, 2016). Moreover, individualizing resilience can detract attention from broader structural concerns that produce undesirable conditions in the first place (Porter & Davoudi, 2012). Capital provision and the broader focus on access—through social capital and capabilities-driven approaches (e.g. Bebbington, 1999; Obrist *et al.*, 2010)—can therefore extend the narrow focus on the material aspects of resilience. We suggest that a focus that emphasizes affect, emotions, and non-human relations enriches frameworks particularly for livelihood assessments, and represents one step in broadening a capital-centric mode of resilience knowing and building.

2.1 Emotion, Affect, and Resilience

Near the time Buzz Holling elaborated resilience for ecological systems, researchers in child development, psychology, and social work began exploring "protective factors," or factors helping steer at-risk children and youth towards positive life outcomes (Garmezy, 1985; Masten & Garmezy, 1985; Rutter, 1987; Werner, 1989; Werner & Smith, 1992). Similar to resilience elaborated in ecological, social, and sustainability science, psychology and social work literatures defined it as an individual's capacity to i) recover after significant trauma, such as violence and cyber-bullying ("bounce-back"); ii) continue positive or effective functioning amidst acute or chronic stress; and iii) achieve positive or desirable outcomes despite experiencing adversity, such as racial discrimination and economic marginalization ("beating the odds") (Brown & Westaway, 2011; Smokowski, Reynolds, & Bezruczko, 2000). While the literature on livelihood resilience has largely evolved independently from these psychology and social work literatures (Alexander, 2013; Brown & Westaway, 2011), recent works demonstrate psychological perceptions of risk, self-efficacy (i.e. evaluation of individual capacities to take action) and response-efficacy (i.e. evaluation of an action's effectiveness) play important roles in agricultural livelihood resilience and adaptation (see Eakin *et al.*, 2016; Elrick-Barr *et al.*, 2016; Shaw, Scully, & Hart, 2014; Truelove *et al*., 2015). The psychology and social work scholarship also features affective embodiments and positive emotional relationships as important factors that build resilience (Bonanno, 2004; Folkman & Moskowitz, 2004; Ong, Bergeman, Bisconti, & Wallace, 2006; Tugade & Fredrickson, 2004). For example, researchers suggest positive emotions impart significant "momentary" or immediate benefits, including reducing physical bodily stress, and expanding the ways in which people cope during crises ("cognitive broadening") by interrupting negative emotions (Fredrickson, Tugade, Waugh, & Larkin, 2003; Ong *et al.*, 2006). Fredrickson's (2001) *Broaden-and-Build Theory* suggests that positive

emotions broaden peoples' thought-action repertoires, which in turn builds their physical (e.g. skills, health), social (e.g. friendship, support networks), intellectual (e.g. expert knowledge) and psychological resources (e.g. resilience, optimism). These works are not blind to the important critiques that have challenged elements of the resilience discourse for perpetuating victim blaming (i.e. people lack spirit to bounce-back) by displacing cause from core structural factors of human capacity (MacKinnon & Derickson, 2013; Porter & Davoudi, 2012).

As it relates to agricultural livelihoods research, one strand of existing research has focused attention on the characterization of human relationships and networks that enable livelihoods to persist while facing harm or overcome loss and damage. For instance, trust and solidarity can engender confidence and hope in overcoming current or future stress or shocks (Shava, O'Donoghue, Krasny, & Zazu, 2009). Kinship and relational ethics mould care and concern between people into safety nets (e.g. risk sharing, modes of reciprocity), responsible for catching livelihoods before loss is aggravated or extends to other community members (Goldman & Riosmena, 2013; Speranza, Wiesmann, & Rist, 2014; Marschke & Berkes, 2006; Osbahr, Twyman, Adger, & Thomas, 2010). In South Africa, cooperative water use strategies engenders a sense of hope, which is viewed to be "…as important as seeds and fertilizer for small-scale farming" (Goldin, 2015, p. 24). Goldin's (2015) work highlights that emotionally generative interactions flowing from human relationships enable water sharing, and serve to sustain livelihoods, even in face of water stress (i.e. emotion contributes to resilience of farmers and communities). A second strand of work examines complex affective relationships and entanglements between agriculturists, places, objects, and non-human beings. This focus shifts attention from human agency—core to livelihood frameworks—to non-human entities as

contributors of livelihood resilience (e.g. Baldwin *et al*., 2017; Boillat & Berkes, 2013; Curry *et al*., 2015; Dwiartama & Rosin, 2014; Galt, 2012; Herman, 2016; Marshall *et al.*, 2012). Herman (2016) calls this "more-than-human resilience," an entanglement that reflects both the agency of humans and non-human actants within socio-ecological systems. In this regard, Marshall *et al.*, (2012) found place attachment and occupational identity of Australian peanut farmers had a strong negative relationship with their capacities to "transform" or radically alter the structure and function of existing livelihoods to social-ecological risks. At the same time, these capacities had the potential to enhance capacities to remain within farming and adopt incremental measures to sustain livelihoods during periods of stress, thus highlighting tensions between different modes of being resilient (i.e. between transformation and adaptation) (*ibid*). In Europe, Herman (2015) explains social resilience of agriculturalists using "enchantment"– personal, contingent, and embodied encounters, both positive and negative—that connect farmers to their existence and to the places and things that trigger emotional being-in-the-world. The smells and bouncing rhythms of tractors, the politics of herds, even the frustrations of farming develop appreciations for farming and help engender a persona in agriculturalists that drive a commitment to farming in a world of change (*ibid*). This scholarship demonstrates that livelihood resilience is not simply reducible to technical and economic determinants but is entangled with people, and people-place connections[ii]. Importantly, these two strands of emerging scholarship—human connections and complex affective relationships between human and non-human components—begin to place resilience within broader emotional and affective relationships with other human and non-human beings. However, scholars often fit described indicators of resilience as grounded in "identity", "sense of place", and "attachment to occupation." While this categorization renders them sensible to a broader audience, it does not go far enough to convey the full weight or importance

of these indicators that originate from them being embedded and constituted from a *lived* world or *reality*.

3. STUDY SITE AND CONTEXT

Our research was undertaken approximately 50 kilometres northwest of Metro Manila in the Municipality of Bustos (Bulacan Province, Central Luzon). Bustos—sub-divided into 14 village-level administrations (*barangays*) with 70,000 inhabitants—exists within the larger Angat River Basin, a key rice-producing region of Central Luzon (Municipality of Bustos, 2013) (**Figure 1, ESM 1** provides .KMZ file). Rice accounts for 86% (2,030 hectares) of the total agricultural land area (2,371 ha), with irrigated rice (1,949 ha) comprising 96% of the total rice planted (Municipality of Bustos, 2014). While rice was grown in all fourteen villages, the production context varied in terms of distance to the canal head, low-lying or high-lying areas, and gravity versus pump-fed irrigation, amongst other factors. The remaining percentage of agricultural land area is divided between rain-fed rice, vegetable and mango production, and aquaculture. Being an agricultural region, over 60% of Bustos households are involved directly or indirectly with agribusiness or agricultural production (Harding, Iwama, & Thomas, 2013). A key pillar for local rice production and coupled livelihoods is irrigation from the Angat Reservoir and the Angat-Maasim River Irrigation System (AMRIS) (Shah, 2015). Resilience is an important consideration for farmers in this region in light of historical agrarian crises, contemporary farming practices, and on-going socio-environmental change.

After Spain ceded the Philippines to the U.S., the colonial government redistributed hundreds of thousands of hectares once held by the Catholic Church (Commonwealth Act No. 1120, 1903; Riedinger, 1995). It was commonplace for those with influence or wealth to accumulate the legal maxima of land (144 ha, or 1024 ha if incorporated) (Wurfel, 1958). Towards the end of the 1930s, tenant numbers were substantially higher than in the preceding decades, particularly in Bulacan (Wurfel, 1954). As numbers increased, an agrarian crisis unfolded featuring peasant-oligarch contestations, resistance to capitalist domination, and peasant uprisings (e.g. Angeles, 1999; Fegan, 1986; Kerkvliet, 1986; Takahashi, 1969; Wurfel, 1954; 1958). This served as a basis of agrarian reform, which i) redistributed large landholdings to tenant and landless households to establish family-farms ($\leq$ 5 hectares) (Republic Act No. 3844, 1963; Republic Act No. 6657, 1987; Government of the Philippine Islands, 1903; Republic Act No. 1160, 1954), ii) sought equal landlord-tenant relationships (Republic Act No. 1199, 1954; Republic Act No. 34, 1933; Wurfel, 1954), and iii) promoted rural credit, mechanization, biochemical inputs, irrigation, and market access to increase production and capital accumulation for new and pre-existing leaseholders and landowners. While reform debates are extensive (Fegan, 1983; 1986; Hirtz, 1998; Putzel, 1992; Riedinger, 1995; Wurfel, 1954), the more intensive means of production now mean high volumes of cash are required at nearly every stage in the farming process (Kerkvliet, 2002; Shah, 2015).

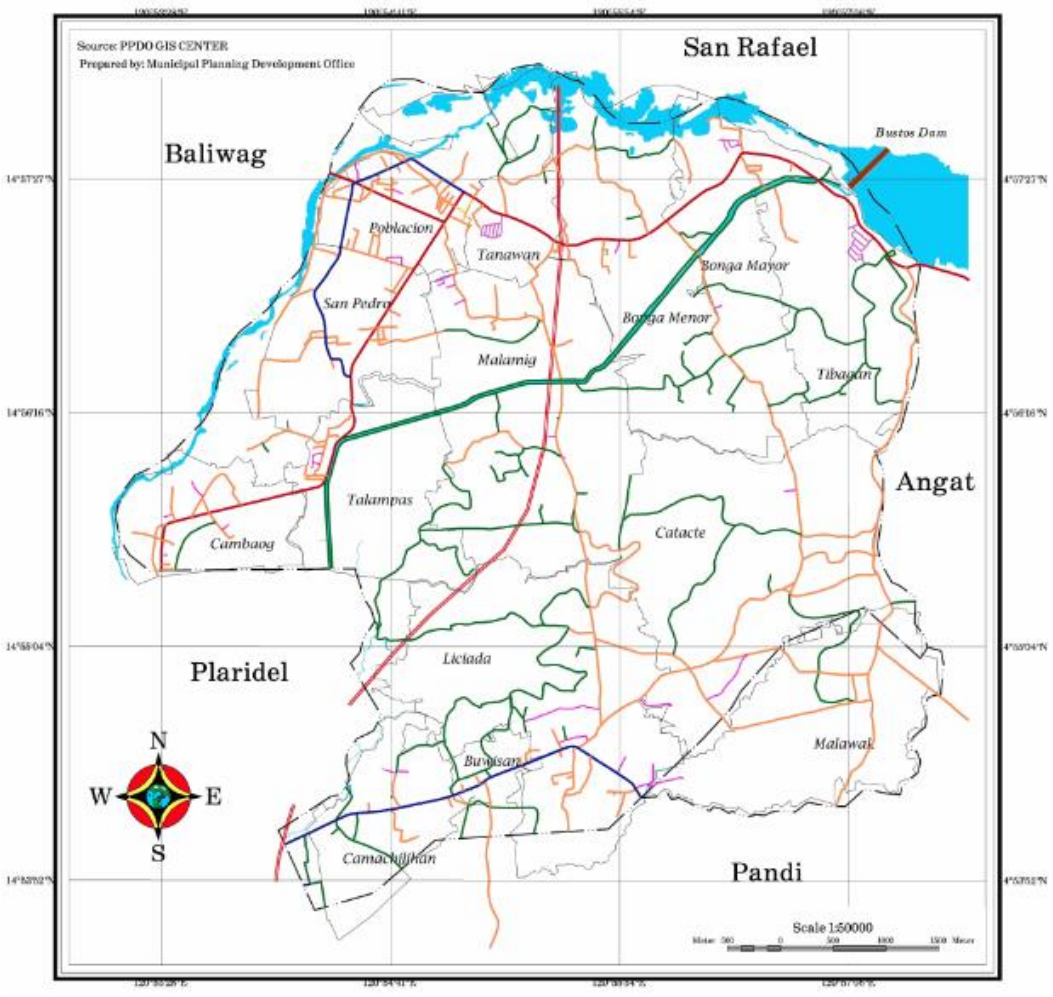

Figure 1: Map of the Municipality of Bustos. Created by the Planning Development Office. Coloured lines represent different road networks; black (municipal) and gray (village) lines represent jurisdictions. Reprinted with permission.

Farming is also an increasingly a high-risk practice. The region is experiencing remarkable social-ecological shifts and external shocks that disrupt seasonal farm operations. These include industrialization and urbanization, "grabbing" land and water intended for agriculture (Fresco & Angeles, 2012), visible failures in local-level irrigation management and infrastructure deterioration (Bedore, 2011), invasive species proliferation that threatens rice production, and a broad set of climate change- and variation-related impacts on rice production (Shah, 2015) (see **Figure 2**). Returning to water for agriculture, reservoir water governance has, since the 1970s, experienced *de facto* and *de jure* shifts that privilege and prioritize domestic water use in Metro Manila over irrigation because of growing urban demand and the broader political climate associated with water privatization (Shah, 2015; Tabios & David, 2004; Torio, 2016). Municipal and provincial agricultural offices provide subsidies, including for seedlings, and improve water security through extension programs that disseminate shallow-tube wells, and train farmers in soil-water conservation strategies around land preparation and seeding for rice production. Nevertheless, the socio-ecological and economic dynamics around farming create a context of high-cost *and* high-risk, which necessitates that smallholder rice-farming livelihoods be resilient.

Figure 2: Socio-environmental change in the Angat River Basin. **1:** Rice-eel shop indicating a growing number of invasive *Monopterus albus*. **2**: Shipment yard symbolic of regional urbanization and industrialization. **3:** Deteriorated irrigation pumps cited as one failure of variable irrigation access. **4**: Aftermath of a typhoon. **5:** Application of pesticides, a key factor in unsustainable land-use practice. **6**: The height of local flooding and the effects on barangays. **Source**: Photographs taken by the authors.

3.1 Research Methods & Data Analysis

Investigating this context using a mixed-methods approach, we administered household surveys (n = 124) and conducted in-depth semi-structured interviews (n = 70) to rice-farming households in Bustos with the objective of exploring: i) how irrigation change and other forms of socio-ecological factors (e.g., typhoons, farming costs, pests) were affecting rice production, and ii)

how households respond to the above changes and linked factors. To be clear, emotive and affective relationships were not the focus of the research design, survey, or interview guide. Rather, these themes emerged as key findings from the range of primary data collected to address broader questions on agricultural change and resilience-based strategies at the household level. Households were selected within different villages using purposive sampling of rice farmers . The purposive sampling criteria include rice-farming households defined as those engaged in irrigated rice production in the last two decades, including those that may have diversified or switched livelihood activities. Members of these households were invited for surveys and interviews. In addition, local leaders and farmers were asked to recommend other eligible respondents who would visit the village headquarters, or who we could interview in their homes or walk through their farms and village-wards (*sitio*).

The surveys and semi-structured interviews in the local language (Tagalog) asked questions around shifts in irrigation access, irrigation water use patterns, broader threats to farming, and on- and off- farm income-generation strategies, such as:

- "Does your household find ways to help continue irrigated farming of the major crop using AMRIS?" / "Has your household undertaken different livelihoods to better meet needs otherwise served by irrigation from AMRIS?"
- "Do you expect [noted irrigation change and agricultural production patterns in general] to continue in the future? Why or why not?"
- "How do your household's strategies compare to what other households are doing in response to changes in irrigation supplies [or broader agricultural stressors]?"

- "What makes other farmers better or worse off?"

Respondents selected from a range of resilience strategies identified in the literature (e.g., water substitution, remittance flows, tricycle driving, construction work, etc.) and were given the opportunity to add to the list and elaborate on their answers. After the survey questionnaires were completed, more in-depth interview questions were asked to the respondents. Since interviews were conducted simultaneously by the primary author and three research assistants, some of these interviews morphed into focus groups (with concurrent Tagalog to English translation) when individual farmers opted to explore in-depth the aforementioned themes, particularly the causes of irrigation change, other agricultural stressors, the future of rice production, and self-reported coping and adaptive strategies. As these organic discussions unfolded, we were struck when farmers elaborated on non-conventional sources of "resilience" particularly those related to religion, spirituality, and faith—all of which emphasize more "intangible" dimensions of resilience. Our qualitative analysis used data-driven codes constructed inductively from raw data at the household-level to develop a broader understanding of resilience (Boyatzis, 1998). Three rounds of qualitative coding were performed using guidelines in Saldaña (2012). First, we coded the data based on "attributes"—identifying similar or recurrent information from surveys, interviews, and focus groups (e.g., *courage* is important; *strong will* is key in farming, *ibid*). Second, we coded the data "descriptively" under thematic groups. Third, we developed broader descriptive groupings, in part, from a rigorous theoretical review of resilience, emotions, and affect, including a review of Tagalog and Philippine-based scholarship on agriculture, disaster-management, and culture. This iterative practice resulted in a focus on intangible resilience, selected among the diverse themes as requiring more exploration in the literature. Our contribution thus elaborates these findings conceptually and empirically, through focus on

specific themes of emotion, affect and worldings.

4. RESULTS & DISCUSSION

The survey indicated coping and other income-generation strategies that were critical responses to crop loss or other damage, water and non-water related. The most popular strategies included water substitution, farm labour, planting different crops, remittance flows, construction and industrial labour, and food vending—all of which are consistent with conventional, capital-based indicators of resilience. In what follows, we highlight emotive and affective relationships with cosmos (and cosmic time), with the Divine, and with oneself—themes that as yet are not well elaborated in the literature, and as such, were not consistent with our expectations upon undertaking the research. For purposes of the empirical and conceptual discussion that follows, these elements function as an articulated "world" through which resilience-based beliefs and actions serving rice-farming become clarified, understandable, intelligible and, more broadly, important for theorization of resilience generally.

4.1 Relations with the Cosmos

Recalled above, we asked farmers about the condition of irrigation services, the future of farming, and life generally. Households reported declines in their own water security elements, including timing, amount, and duration of irrigation water during both wet and dry seasons. These narratives were consistent with the urban bias in water rights reform and allocation from the Angat Reservoir, the local-level deficiencies in water access (e.g. inadequate canal maintenance, frequent infrastructure breakdown), and the individualistic water use between

upstream-downstream farmers. Herein, the majority of rice-farmers surveyed reported changes in water access over the past two decades. Through coding households' statements on irrigation services, we found that of those reporting a "change", respondents viewed change as negative for timing (76%), duration (74%), and amount (68%). Households commonly stated if irrigation *permanently* stopped or discontinued, so too would rice-farming. However, *permanence* was often contrasted with *transience* in life in general and agricultural production in particular, given its seasonal-cyclical nature and dependence on weather patterns. One farmer evoked a common phrase, "*weather-weather lang* [ang pagsasaka]" (a phrase derived from *pana-panahon lang* with multiple layers of meaning, i.e. that farming success has its own time, is largely dependent on the weather, or a matter of cyclical luck). Elaborating on the meaning of this, they told us, "You just have to be positive you'll get through everything. Life has its highs and lows, like the changing weather." The concept of *weather-weather* (from *pana-panahon*) – highs and lows – is an ontological reference that naturalizes stress and the resulting hardships of farming as cyclical, coming and going, and oscillating between periods of misfortune and fortune (Tiangco, 2005, p. 65). It reflects occasion, seasonality, and life's intermittent fate; it is a metonymy for fate and metaphor for faith[iii]. Another household elaborated their sense of faith, stating "*Pag may hirap, may ginhawa*" (Difficulties are followed by comfort or ease), a Tagalog proverb that connects to the Catholic tenet of attaining purification and "the good" through suffering (Mercado 1994). Another individual, this time a community leader in the region, recalled Matthew 24:13 (*But he that shall endure unto the end, the same shall be saved*) before later stating:

> "We are happy at the end of the tragedy. [It's] a very typical Filipino story. One example is Tacloban [City in the Visayas most devastated] during Typhoon Haiyan [Yolanda]. Still, people are very positive about the future, that there will be good things. Simply

saying, there is light at the end of darkness or light at the end of the tunnel."

Even Philippine government officials, including those from Agricultural Offices, told us that despite variation and ups-and-downs in farming, farmers are motivated by the hope of a good harvest. These actors – farmers, community leaders, and government officials – mentioned that even amidst tumultuous socio-environmental changes in Bustos, there is hope and positivity for light, fortune, and the recurrence of "good harvests." Farmers draw these from indigenous conceptions of relational time, which understands the cosmos relationally as composed of spiralling and returning events (Mercado, 2001). The philosophical and metaphysical traditions common in Western worldings understand time as linear and separated into the past, present, and future, and subsequently does not view positive events, such as success in farming, as necessarily returning (*ibid*). Positive sentiments of hope and fortune, based on the certainty of cyclical time, are a source of persistence for many rice-farming households that remain in farming, even following production failure and livelihood instability. Critically, these beliefs and coupled emotions associated with cosmological transience and relational time are re-enforced and made real through hard work, farm diversification practices, and faith in the Divine during tumultuous times.

4.2 Relations with the Divine and Oneself

To simply state that households remain in rice farming because of a predetermined certainty for fortune following misfortune cannot capture the complexity of farmer resilience worldings shaped by cyclicality and transience. When asked in interviews about different means of persisting in farming and what makes certain farmers much better off than others, farmers spoke elaborately of their courage, willpower, and determination to continue rice farming, captured by

the concept, *katatagang-loob*. *Katatagan* (stability, strength) is a noun related to *matatag* (stable, strong) and an adjective, meaning "durability and endurance" with *loob* (internal), thus, placing these traits as "internally inherent and originative" within a person (Tiangco, 2005, p. 57). Taken together, *katatagang-loob* ("internal strength") is the "spirit of undying resiliency reflected upon acts of self-endurance and self-durability amidst challenges and adversity" symbolized through determination (*ibid*, p. 62). Tiangco (2005) evoked the bamboo – flexible and durable with nature, bending and enduring rather than resisting the storm – as a metaphor for describing *katatagang-loob*. This "inner strength", the capacities to endure and overcome adversity, was also described by interviewees as rooted in, and growing from their: i) faith in their capacities to do "whatever necessary" (their *maabilidad*) and ii) their faith in God to honour and protect their ethic of *maabilidad*. Our findings suggest farmers' inner strength and courage emerging from affective connections to their own self-efficacy enable them to persist in farming amidst water and other socio-environmental stress. This is nurtured by faith from an affective relationship with the Divine, whose protective powers were contingent upon households doing "whatever necessary." Farmers' faith in their own capacities were represented as prior memories of getting through difficult times, studious and careful land preparation techniques, and diversified off-farm and non-farm income generation activities, which complemented and fed back to support farm operations. Farmers in one focus group noted:

> "I get my sense of inner strength from my experiences. It is also because we have faith in ourselves that we gain courage in farming. We do whatever is necessary and combine it with the courage to take risks. Victory comes next."

> "Our capital in farming is willpower and determination because farming is where we get our means for daily living. Almost all farmers have the same view about willpower but when it comes to finding ways to improve our living, we can't just rely on farming alone. We try to have other sources of income like piggery and planting vegetables..."

> "Hard times are painful experiences, like when everything was lost due to a calamity. Everything I hoped for disappeared. Of course, it's hard when you lose what you are already expecting. Still, what helped me was the courage I had within that in trying again, I might be able to regain what was lost. I didn't lose hope and started again. It all goes back to having capital, determination and willpower. The life of a farmer revolves here."

Thus, farmers were affected by their self-efficacy generated from courageous risk-taking, determination, and willpower enabling them to "try again" and protect or absolve their losses using new livelihood opportunities that could help start-up and support agricultural activities. Their messages speak to how "capital"—explicitly liquidate-able assets—and alternative livelihood activities are enrolled, entangled, and exist in tandem within intangible dimensions of resilience. From the narrations above, combined *mabilidad* and *katatagang-loob*, catalysts for alternative indications of resilience to grow (e.g. learning from failure, livelihood diversification), become a resource as important as conventional forms of capital frequently emphasized in development programs, such as land and finance.

We also found courage and determination, as enrolled within *katatagang-loob* (inner strength), to further emerge from farmers' faith in the Divine. For example, two other rice farmers told us:

> "If you believe in God, you will gain courage. You begin to have hope that the Lord will help you in performing your work and give you longer life to be able to do it."

> "Even if [one] lose[s] faith, farming will have to continue. I will only stop farming when the landlord sells off the land. If your faith is strong, you will find even greater strength in farming."

These narratives indicate relationships between faith in God, and a farmer's strength, stability, and vitality in farming. Popular Philippine psychology (*sikolohiyang Pilipino*) refers to the fatalism of Filipinos using the term "*bahala na*," originally from "Bathala na" (God/Light willing). However, it is often corrupted to mean "whatever" or "come what may," in this sense, a term that "signifies leaving something or someone in the care of God" (Gripaldo, 2005, p. 203). While it can be interpreted as a fatalistic attitude, it has also been cited in that it "becomes a coping mechanism in the face of risky undertakings" (*ibid,* p. 216, citing Distor, 1997; Lagmay, 1977). One farmer explained this balancing act in the situatedness of their resilience as one that does not rest within a framework of fatalism: "*Bahala na* is not usually used. *Pananampalataya* (faith) is more significant." Farmers with "*bahala na*" attitudes in Bustos accept defeat or loss in their farm operations but they might see this attitude as positive only when "good" accidents or unintended consequences happen. "*Pananampalataya*" or "*pananalig*," (faith) on the other hand, comes with hope, hard work, and a positive outlook. Farmers who had these traits believed that

something good lies ahead because they trust in either the power of Divine Providence, coupled with their own capabilities, or the support of another person or something supernatural, illustrated in the popular saying: "*nasa Diyos ang awa, nasa tao ang gawa*" (Mercy comes from God, but man should take action, after James 2:17). Farmers are thus spiritual in the sense that the Divine will protect them through turbulence, particularly if hard work, skill or strategy, and dedication (*maabilidad*) is present—emphasizing the *lived natures* of their worlding.

> "…The farm was given to [us] by God but if you just leave other people to tend it and not even check on it, you'll just end up being a "*magsasako*[v]" [not *magsasaka*[iv]]. I believe faith and religion play a part because if you just rely on your own strength and not ask blessings from God, you won't prosper."

The combination of *pananalig* and their *mabilidad* and *katatagang-loob,* taken together, grants resilience, elaborated in one lengthy conversation:

> "I sometimes lose will power when calamities strike. What you own is destroyed, although, I was able to get something in the end. When things like this happen, I pray. There are things that are inevitable. I do not sulk. I study the situation, do what needs to be done, and then leave it up to the vegetables to grow... When the damage is big, it's hard to get back up but there is always hope left. I believe that there is a better ending. I believe in myself and I have trust in what I can do".

Farmer narratives of *katatagang-loob* (internal strength) emerge from an interdependent relationship between faith in oneself and in God. As emphasized above, their "world" develops affective relationships from which courage, belief, and determination are drawn in as emotive

indicators of resilience to support rice production. Importantly, such worlds appear neither "modern" nor "indigenous" or "Western/non-Western" but a complex hybrid. For example, numerous authors suggest historical and contemporary Filipino Catholicism is not the result of Hispanic or Vatican-led "Christianization" (Bautista, 2010; Ileto, 1979; Moreno, 2008; Rafael, 1988; Strobel, 1997), but rather, it is a product of interpreting Catholic faith tenets from indigenous pre-colonial beliefs and practices around animism, polytheism, superstitions, and enchanted places and beings (Mulder, 1992; Strobel, 1997, p. 76). In our case, we see the co-existence between multiple worlds, and worldings, often assumed to be separate. Filipino cosmic time (Mercado, 1994; 2001) and Catholic faith tenets are evoked together, promising hope and a better ending. Farm households engaged other income-generating strategies, interpreting "hard work" or *maabilidad* as a prerequisite to fortune and protection by the Divine forces. From this intermeshing and co-existence, we suggest that localized or provincialized sources of resilience can become appreciable and intelligible within a much more cohesive and comprehensive framework for understanding and enacting representations of the world. Of course, not all farmers shared similar religious beliefs and faith in the divine—and indeed at least one young farmer in his twenties actively resisted such a claim during his interview. Nonetheless, varied elements of affective, emotions and spiritual relationships emerged through discussions with farmers. Attending more fully to these features is instructive to open and explore multiple and varied layers of what resilience is, or could be, including more-than-human particularities, as situated within the Bustos social-ecological system (Dowling, Lloyd, & Suchet-Pearson, 2017).

5. CONCLUSIONS

This paper began with an observation that modes of building resilience using Western-centric and capital-centric logics are all too often universalized and applied in diverse times and places. Within such frameworks, resilient farmers are said to hold diverse livelihoods that are both flexible and adaptive in response to rationale and calculated readings of biophysical hazards. Material capitals, or access to these through entitlements, rights, and opportunities, are often seen as the primary mode through which livelihood resilience is engendered to effectively deal with global change processes. Our work allows us to argue that this is an overly narrow conception of what being resilient *is*, or *could be*. The results presented here offer an account of what indicators of livelihood resilience "look like" on the ground in Bustos. Building on emerging works that similarly highlights its affectual, emotive, and relational structures and processes for farm communities, we have highlighted how hope, faith and spirituality collide and articulate livelihood diversification and hard work as important for livelihood resilience. These bases of resilience are expressions and enactments that can only be understood in relation to the particular and evolving worldviews of these agriculturalists.

The "social turn" in resilience is a promising pathway for theorizing social dynamics and processes that constitute alternative modes of being resilient, particularly in non-Western contexts. It symbolizes a significant break away from inferring normative and universalized principles of what resilience is, and how it ought to be achieved, towards learning and understanding how its principles emerge from local social-cultural-ecological systems (Cote & Nightingale, 2012). Yet, resilience's social turn cannot merely be a project of identifying diverse sources and mechanisms of resilience under diverse social organizations and political/power

structures. It must also give localized indications of resilience weight and validation.

A worldings framework places situated sources of resilience within the making and remaking of worlds. This has been difficult to accomplish thus far because we often read, rank, and evaluate sources using a "Western", "expert", "scientific", (or non-local) lens, which can leave us confused about the utility and logic of intangible sources of resilience, or enable us in rendering them lesser and inadequate for dealing with global environmental change (Theriault, 2016). In other words, when we read local worlds through objective, scientific, and Western contexts as being insufficient, unsafe, or categorically incorrect for responding socio-ecological change, we engage in processes of delegitimizing, contesting, and subverting other knowledges and modes of being. Rather than labelling other knowledge as "cultural", "folkloric", or "superficial", it is important to understand farmers or others as living and enacting certain resilience strategies that are intelligible and sensible *within their worlding* (Blaser, 2013). If we accept that there are multiple worldings or realities in existence that are known, enacted, and reacted to, then there can be no objective or universal model of resilience. We are instead left with competing models of resilience, and efforts to actively rebuild resilience through multiple worldings – a shift from universality to pluriversality (Blaser, 2013; Collard, Dempsey, & Sundberg, 2015).

As scholars in water governance suggest, just as H_2O constitutes its own *reality* (one where hydrogen and oxygen are bonded), so too does the complex relations that animate agrarian worlds (Yates *et al.,* 2017). Both constitute valid realities for different peoples, though we privilege the former as the reality and often dismiss the later as a mere "construction." If this is to change, then radical difference and deeply sedimented, colonial ways of representing, knowing, and being must be treated seriously (Yeh, 2015). All too often, acts to replace different

worlds with hierarchical knowledge and practice systems reifies the North-South domination and constitutes the coloniality of being, relations, and lives (Maldonado-Torres, 2007). In sum, this paper ought not to be read as individualizing resilience wherein the poor do not "need" material goods because of their worlding. Nor do we intend to suggest intangible indicators of resilience are the only, nor the most important, sources of resilient communities. Rather, this paper brings emotive and affective dimensions—one subset of intangible resilience—more fully into human-nature resilience scholarship, reflecting that diverse worldings can be given attribution, validation, and value signification to enable and support radically different modes of 'being resilient.'

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NOTES:

[i] A large literature exists on the social construction of reality. For our purposes, we draw specifically on Blaser's conception. Other works of interest include Heidegger's (1962) *Being and Time* and Berger and Luckmann's (1966) *The Social Construction of Reality.* Other key works include the social construction of gender identities (de Beauvoir, 1949), of everyday life and performance (Goffman, 1959), of knowledge, more broadly (Haraway, 1988).

[ii] A common strand of work, though not specific to agricultural livelihoods, suggests interdependence and respect told through Creation Stories form the bases of relationships between humans and non-human animals. The constitutive fabric of these relations and respect for institutions has been evidenced to sustain environmental services and biodiversity over long periods of time, in turn supporting resource-based livelihood activities (Berkes *et al.,* 1995; Gadgil *et al.,* 1993; Ostrom, 1990).

[iii] Thank you to D. Gupa and C. Piocos for helping us articulate this point from our narrations and fieldwork.

[iv] Magsasaka is a noun (farmer) or verb (to farm). *Magsasako* can mean a verb (to put something in a sack) or a noun to refer to some one (not necessarily a farmer; could be a junk shop owner or scrap collector) who puts things in a sack. *Magsasako* is used here as a play on words, or a local pun, where farmers referred to themselves as coming home from the field empty handed (i.e. with an empty sack).