INTRODUCTION

The global environmental situation presents humans with challenges of unprecedented complexity. It introduces unique, and uniquely thorny, moral conundrums (Gottlieb, 2019). Responses to this complex situation depend heavily on knowledge and scholarly understanding, which is constantly evolving. This paper is motivated by a simple argument: The challenges we face are novel, massive and wickedly complex, and this means that we almost certainly need novel approaches to address them. Almost by definition, creativity is a primary way we can move towards those novel approaches. These new approaches can then lead to and be part of the societal transformations that are, according to many scholars, necessary (Haxeltine et al., 2018; Loorbach et al., 2017).

Scholars have identified many of the thorny problems that populate the environmental field as ‘wicked problems’ (Turnpenny et al., 2009). Wicked problems cannot be defined in one way, have no right and wrong answers, and lack clear causes and effects.
(Rittel & Webber, 1973). In order to address complex wicked problems, decision-makers must engage both descriptive and normative information (Farrell, 2011; Wexler, 2009). This means that values (i.e. core constructs that comprise normative ‘information’) play an important role. Yet characterizing values, perhaps especially the many types of values related to nature, is notoriously challenging (Satterfield, 2001). Here, I argue that intentional efforts to employ creativity in research and practice related to the multiple values of nature may help us to meet that challenge; I argue that employing creativity can help values-related research to address wicked environmental problems in ways that honour a diversity of perspectives and types of meaning.

1.1 | Definitions of the multiple values of nature and creativity

The term ‘multiple values of nature’ (MVN) is one of a suite of evolving terms that represent the diverse values associated with ecosystems. The term, like many related terms, is often associated with the goal of characterizing these values for inclusion in decision-making. Also like related terms, the MVN umbrella intentionally encompasses multiple fundamental meanings of value: value as worth (the benefits or worth that ecosystems provide to people, e.g. through spiritual fulfilment) and value as principle (the principles associated with ecosystems, e.g. reciprocity, responsibility, domination). At present, studies of MVN tend to have a positive normative orientation: Research and practice focus on values that promote sustainability and pro-environmental action (Hoelle et al., in prep.). Thus understood, studies of MVN could address diverse venues and contexts of ecosystem-related research and decision-making. Venues range from urban development (Unnikrishnan & Nagendra, 2015) to marine-protected-area planning (Jobstvogt et al., 2014), and contexts include both specific decision-making situations and descriptive studies with no direct connection to decision-making (Gould et al., 2019).

One interpretation of the MVN concept is that it offers—or hopes—to synthesize different portrayals of environmental value(s) under one umbrella. These include ecosystem services, and particularly cultural ecosystem services (Gould, Morse, et al., 2019; Hirons et al., 2016; Milcu et al., 2013); social values (Kenter, 2016; Kenter et al., 2015); relational values (Chan et al., 2016; Himes & Muraca, 2018); and nature’s contributions to people (Díaz et al., 2018; Pascual et al., 2017). MVN also overlaps with increasingly prominent discussions about pluralistic or integrated valuation, and, often relatedly, the importance of transdisciplinarity and reflexivity in values-related research (Jacobs et al., 2016; Kenter et al., 2019; Tengö et al., 2017; Zafra-Calvo et al., 2020). Using Horcea-Milcu et al. and’s (2019) presentation of four perspectives on values in transformational sustainability science, MVN research directly addresses three of the four: Surfacing implicit values, negotiating values and eliciting values. It interacts, in ways still being elucidated, with the final perspective: Transforming through values (Horcea-Milcu et al., 2019), especially when valuation processes are conducted in equitable and participatory ways (Zafra-Calvo et al., 2020).

Creativity, as used in this paper and many others, involves the intersection of ‘novelty and utility’ (Szostak, 2017). Specifically, creativity is ‘the ability to produce ideas or products that are both original and adapted to the context and constraints of specific tasks’ (Sternberg & Lubart, 1999) (Darbellay et al., 2017, p. xvi; citation original). More simply, ‘creativity is defined as the production of original and useful ideas’ (Januchowski-Hartley et al., 2018). For MVN research, this means that creativity can help people to develop new forms of valuation that are useful within valuation contexts—either existing or potential future valuation contexts, including contexts that stem from creative endeavours. Also important for MVN research, with its global focus and attention to cultural variation, is that the concept of creativity may be interpreted and assessed differently in different cultures. In particular, some cultures may more strongly emphasize the novelty aspect of creativity, whereas others may more strongly emphasize the utility aspect (Lu et al., 2019).

1.2 | Why focus on creativity?

Creativity is one constructive way to confront wicked problems and closely associated crises. Much discussion, both academic and otherwise, suggests that we need to enlist ingenuity and creativity to successfully confront the wicked problems that characterize our environmental challenges (Chapman, 2015; Palmer et al., 2009). More specifically, scholars have identified the potential of creativity to deal with the ‘seemingly intractable’ problems inherent in conservation work (Aslan et al., 2014). More broadly, research beyond the environmental field identifies the need for creativity in managing crises because ‘by definition, crisis conditions present unforeseen or unmet challenges that can only be addressed by innovative responses’ (Pearson & Sommer, 2011). As the COVID-19 pandemic and its aftermath unfurl around us, we are increasingly surrounded by challenges that are unmet, although not entirely unforeseen. It is not hard to argue that we will only address them effectively if we are wildly innovative.

In 2012, artist Austin Kleon wrote Steal Like an Artist: 10 Things Nobody Told You About Being Creative. This book provided foundational inspiration for this paper because it presents creativity as highly relevant to many pursuits—including research—and offers suggestions that, although written for artists, apply astoundingly well to scholarly research. (Important to note up front is that Kleon uses ‘steal’ playfully yet carefully; his version of ‘stealing’ involves respect, careful study and honouring others (see Figure 1). Kleon fully recognizes the wide applicability of his message; on the first page, he writes: ‘These words apply to anyone who’s trying to inject some creativity into their life and their work. (That should describe all of us.’) (Kleon, 2012).

A second source of foundational inspiration for this paper is design thinking. Design thinking is ‘a methodology for creative problem solving’ (Stanford d.school, 2020). When defined in this way, design thinking intertwines with creativity (Szostak, 2017). The primary
The strand of MVN research that addresses cultural ecosystem problems, much MVN research uses only established approaches. A key way to address thorny, wicked problems for decades has been proposed as a primary means of leading to innovation because, as a reviewer of Ness’s book notes, ‘predictability is prized over boldness’ (Voosen, 2015).

An important part of that global conversation was the idea of wicked problems: Early in the formulation of the concept of wicked problems, scholars suggested that confronting such problems requires intentional design (Buchanan, 1992; Rittel & Webber, 1973). In other words, design thinking, which has creativity at its core, has been proposed as a primary way to address thorny, wicked problems for decades.

Despite the promise of creativity for addressing environmental problems, much MVN research uses only established approaches. The purpose of design thinking is to address problems—any kind of problem, including our planet’s wicked problems. The Stanford d.school, also known as the Hasso Platter Institute of Design, and the design firm IDEO played central roles in bringing design thinking to its current prominence. Although the term design thinking arose in association with those two institutions in California’s Silicon Valley in the 1970s and 1980s, the concept ‘has deep roots in a global conversation that has been unfolding for decades’ (IDEO, 2020). An important part of that global conversation was the idea of wicked problems: Early in the formulation of the concept of wicked problems, scholars suggested that confronting such problems requires intentional design (Buchanan, 1992; Rittel & Webber, 1973). In other words, design thinking, which has creativity at its core, has been proposed as a primary way to address thorny, wicked problems for decades.

Another way of portraying the reason to employ creativity in the MVN space is that academia is perhaps uniquely poised to address some of the society’s most difficult challenges by being visionary and daring. Other major sectors of society experience substantial constraints on trying new things: For instance, most governments must constantly consider public approval, industry must turn a profit, and non-governmental organizations often must appease funders. It is arguably academia’s job to wield the power of ideas to try to forge new paths through the complexity. In many cases, academics have more leeway than those in other sectors to do this (Luby, 2018).

Although some scholars describe academics’ freedom and potential for big thinking, scholarship that addresses creativity in academia identifies multiple ways that academic structures and realities constrain innovation and risk-taking (i.e. creativity). Over 30 years ago, Loehle (1990) noted multiple pressures and barriers that impede scholars’ creative thinking: disciplinary structures; the short-term, outcome-oriented nature of funding; and schedules that leave scant time for the ‘arcane and almost lost art that today we label thinking’ (p. 127, emphasis original). More recently, Ness (2015) describes how researchers face a ‘creativity crisis’; she cites reasons similar to Loehle’s and adds concerns about promotion and tenure. Scholars are increasingly hesitant to engage in creative and outside-the-box (and therefore risky) research despite its likelihood of leading to innovation because, as a reviewer of Ness’s book notes, ‘predictability is prized over boldness’ (Voosen, 2015).
In aggregate, the literature described above suggests that if MVN research embraces creativity, boldness and experimentation, it may have increased potential to meaningfully address the wicked problems that characterize environmental issues. The strategies below offer ideas for how to embrace creativity in MVN research.

2 | STRATEGIES FOR HOW TO BE CREATIVE IN MVN RESEARCH

As the core of this paper, I offer six strategies drawn from research on creativity (Table 1). The strategies were informed by interdisciplinary literature on creativity, especially the academic book Creativity in Research (Ulibarri et al., 2019) and Kleon’s popular press book about creativity in general (Kleon, 2012).

2.1 | Define the problem carefully and intentionally

2.1.1 | Details from the creativity literature

Careful problem definition is a core step in fostering creativity in research (Chapman, 2015; Loehle, 1990; Szostak, 2017). If we omit this step, there is a danger that we may become enmeshed in details too quickly and thus not fully understand the context or what we aim to accomplish. As Ulibarri et al. (2019) note, ‘Albert Einstein—someone considered to have been a fairly creative person—is apocryphally quoted as saying: “If I had only one hour to save the world, I would spend fifty-five minutes defining the problem, and only five minutes finding the solution.” Even if he didn’t say it, it’s worthwhile advice to heed’ (p. 75).

One aspect of defining a problem is recognizing that there are often multiple ways to portray the problem at hand; this is a core characteristic of wicked problems (Rittel & Webber, 1973). The goal of defining a problem is thus not necessarily to drill down to the ‘correct’ problem. There may be no such thing, especially with issues as complex as the values of nature. Research problems can be seen as components of the larger wicked problems that research is trying to resolve. Like the larger wicked problems, the research problem likely has no definitive formulation.

Yet clearly identifying a problem can be helpful even if there is no one definitive formulation. One helpful aspect of problem definition is that it allows you to unveil and specify assumptions. In other words, an important part of a problem’s formulation is a list of assumptions that underlie the problem. Once you identify those assumptions, you can then evaluate whether or not they are valid (Ulibarri et al., 2019). In some cases, you may realize that your assumptions were faulty.

| TABLE 1 | Six strategies from the creativity literature and potential applications to research on the multiple values of nature |
|----------------------|-------------------------------------------------|-----------------|
| **Strategy** | **Pointers from the creativity literature** | **Applications to MVN research** |
| Define the problem carefully and intentionally | • Ensure that research addresses the proper problem | • Re-assess, examine and carefully define the problem(s) MVN research aims to address |
| | • Make assumptions explicit (and make sure they are accurate) | • Question assumptions about what forms of MVN research will help decision-makers |
| Be inspired by previous work | • Take inspiration from sources both within and outside of your field | • Build upon previous research, both recent and not, on why nature matters |
| | • Combine aspects of diverse sources to create something new (a ‘remix’) | • Do not limit sources of inspiration to research; ideas may come from unexpected sources (e.g. a song, news story or child’s comment) |
| Be open-minded and nurture scepticism | • Seek out people with different (even contrasting) opinions or perspectives | • Create fora that encourage open-minded exchanges of ideas but do not reinforce power hierarchies |
| | • Allow ‘divergent’ thinking (i.e. expansive thinking not constrained by practicality) before honing ideas with ‘convergent’ thinking | • Use prompts that encourage large quantities of zany ideas (see Table 4 and this strategy’s ‘Suggestions’ list) |
| Don’t use only words | • ‘Step away from the screen.’ Use non-digital methods, especially when in idea-generation mode | • Consider non-verbal approaches in multiple research stages (e.g. design, data collection, result-sharing) |
| | • Activate and access new regions of your brain via non-verbal modes of expression | • Glean inspiration for MVN research from non-verbal phenomena or entities in your surroundings |
| Iterate and ‘fail early, fail often’ | • Share work frequently and early; consider sharing ‘prototypes’ of various kinds (e.g. with colleagues in-and outside of academia) | • Share ideas and efforts to characterize MVN even when they are imperfect; focus on lessons learned and possible next steps |
| | • Channel the energy of critique into the drive to create something new | • Adopt a mentality of collective iteration: Consider previous MVN work as ‘prototypes’ upon which scholars can collectively build |
| Embrace teamwork | • Consider multiple facets of diversity (e.g. demographics, experience, personality) in developing teams | • Embrace the global nature of MVN research and use technology to create teams that cannot meet physically |
| | • Encourage diverse teams to question assumptions in new ways | • Create transdisciplinary teams for MVN research |
In many cases, you will uphold the assumptions as true. In this case, making them explicit can enrich how you approach the problem.

### 2.1.2 | Relevance for MVN research

Reflecting on the problems that MVN research aims to solve can lead to realizations about the nature of the task that motivates this research and the assumptions that may implicitly underlie the field. Problem framing encourages researchers to consider: Why is recog-

izing diverse value in policy so difficult? What are the hurdles (problems) that make that goal difficult to reach?

To demonstrate how a focus on problem definition may be helpful, I offer three possibilities of fundamental problems that MVN research aims to confront (Table 2). These problems intend to start a conversation; they embrace the literature’s message that there is no one ‘correct’ problem formulation. Readers may disagree with these exact problems or how I have described them. And other problems—some of them likely equally fundamental—surely exist. Refinement of the problems MVN research needs to address could be the subject of another paper, and the difficulty of that exercise demonstrates how following this strategy can help MVN research to question assumptions and make sure we are ‘addressing the right problem.’

### 2.1.3 | Suggestions for MVN research

1. Take a step back to determine what problem your research is trying to solve. Is it one of the three problems in Table 2, a permutation of one of those problems, or something else? Can you dig down a layer to reveal a deeper problem that might lead to new ideas?
2. Do the problems you are trying to solve differ from place to place, and, if so, due to what factors (e.g. type of governance or types of values that are most prevalent)? What can you learn from the differences in problems, or in how problems manifest?
3. What would people from other perspectives identify as the problems MVN research is trying to address? (See the final strategy for more on this.)

### TABLE 2  Examples of problems that MVN research aims to address, descriptions of those problems, and questions that arise from problem descriptions

| Problem MVN research aims to address | One possible description/formulation of problem | Questions that arise from problem description |
|--------------------------------------|-----------------------------------------------|---------------------------------------------|
| Some kinds of values are under-represented, and that under-representation has equity implications | Certain kinds of value receive disproportionate formal attention in decision-making spheres. The concepts used in and the structure of valuation processes influence the values (and the types of value) that are considered in that valuation (Jax et al., 2013). This problem intertwines with the fact that, in many cases, values are not ‘out there’ waiting to be measured but are formed through social interaction such as deliberation (Kenter, Bryce, et al., 2016). One scholarly treatment of this issue centres around value-articulating institutions (Vatn, 2009) and recognizes that ‘valuation methods operate as value articulating institutions, which influence value formation and co-determine value themselves’ (Himes & Muraca, 2018) | How can we increase the representation of diverse (multiple) values of nature (and who is ‘we’?) |
| Tension between data needs of decision-making and ways we know how to represent many values of nature | The MVN field faces a fundamental tension: That between requests to characterize MVN in particular ways (e.g. quantitatively), and core features of MVN (e.g. that many are difficult to represent quantitatively). An often-repeated request for ways to characterize MVN is that techniques must be implementable with scarce resources and thus must require no or minimal new data collection, or data collection that is not time-intensive. This requirement, however, clashes with two characteristics of many values of nature: They are place-specific (which challenges universalism and related ‘efficiencies’) and highly complex (not lends themselves easily to unidimensional representation). In the past century, many scholarly fields have addressed issues related to MVN; one perspective on recent MVN research is that it aims to make this extensive work more immediately applicable to decision-making, partly through transdisciplinary approaches. This effort will likely only succeed if the tension named here is addressed | How can we address the tension between requests for particular ways to characterize MVN and the features of MVN, with constant attention to how ‘decision-ready’ metrics may miss crucial insights (e.g. Nahuelhual et al., 2016)? |
| Pluralism is both an opportunity and a challenge | Arguably, the central call in the MVN literature is for pluralistic approaches to valuation. Pluralistic approaches offer many crucial benefits, including attention to diverse ways of knowing that seems difficult to achieve in any other way. Yet pluralism also presents challenges. Some see the incommensurability that often characterizes pluralistic valuation as its Achilles’ heel (Centemeri, 2015). Relatedly, valuation processes that incorporate multiple types of value will likely be more complex than unidimensional valuation | How can MVN research address the challenges presented by pluralistic valuation? |
2.2 | Be inspired by previous work

2.2.1 | Details from the creativity literature

Kleon's titular piece of advice is to ‘steal’ inspiration from diverse places, like artists do. But Kleon uses ‘steal’ in a very particular way. He creates a table to summarize his interpretation of stealing (Figure 1). His basic point is that 'every new idea is just a mashup or a remix of one or more previous ideas' (Kleon, 2012). Similarly, Aslan et al. (2014) write that 'creative solutions most frequently arise from the hybridization of existing ideas and synergies involving many sources' (p. 346). No idea emerges out of thin air; ideas are always based at least in some way on things we know, see, hear or otherwise experience. To be truly creative, Kleon suggests, you have to embrace this, relish it, play with it.

Two early founders of Stanford's design school make a parallel point: 'Being creative doesn't have to mean starting from scratch or being the sole originator—it's about adding what you can, about making a creative contribution' (Kelley & Kelley, 2013). The strategy to be inspired by others' work, therefore, mindfully recognizes the power of building on others' good ideas. A common suggestion in the creativity literature is to be inspired by widely diverse sources. Rick Szostak (2017), in a chapter entitled ‘Interdisciplinary research as a creative design process,’ notes the importance of getting inspiration from unconventional sources: 'The interdisciplinary researcher should appreciate that locating the right set of literature—that is, connected but in a way that nobody has appreciated—is an important source of creative insights' (p. 22).

2.2.2 | Relevance for MVN research

Being inspired by others' work is fundamental to scholarship. Literature search and subsequently building on what other scholars have done are foundational steps in academic work (Davies & Hughes, 2014). This strategy for creativity recognizes this traditional aspect of research, but it goes a step further. It encourages scholars to be intentional about how they take snippets of inspiration from many places (including unexpected places) to create a new question, approach, technique, etc. Figure 1 demonstrates this; Kleon advocates honouring and studying many sources, then transforming elements of them into a unique ‘remix’ and clearly crediting the sources of those elements.

For MVN research, this strategy emphasizes that contemporary scholars are not striking out alone to characterize why nature matters. They study, honour and build upon centuries of work on relationships between people and nature, and they integrate and develop these past approaches and ideas so they can more easily enter decision-making spheres. In addition to working with centuries of human–nature relationship research, MVN scholars also build on more recent research in the many fields that address MVN (Table 3). They likely also can and should build on a wide array of other fields and experiences that may seem unrelated, but may offer nuggets of insight to MVN work. These may include sources outside of academic or research spheres (Koch, 2020).

2.2.3 | Suggestions for MVN research

1. Make time to absorb (read, view, etc.) other research, both in the interdisciplinary MVN field and in other arenas (both academic and not) that may seem unrelated. Note aspects of this work that you find intriguing, novel or exciting. Consider how you might build on components of other work and combine these components in new ways.

2. Allow yourself to explore seemingly unrelated avenues for ideas. Innovations often stem from moving ideas from one realm to another, so let your mind wander as you cook, shop, read with your children, watch old television shows. What might those spaces have to offer to how we can understand MVN?

2.3 | Be open-minded and nurture scepticism

2.3.1 | Details from the creativity literature

A third strategy to generate creative thinking is to welcome and relish contrasting views and the scepticism they engender. At the core of this strategy is open-mindedness: being amenable to the news that your approach has flaws. A person using a creative approach would frame this news not as unwelcome, but as crucial information that allows them to tweak and retool to address the flaws (Ulibarri et al., 2019). Another aspect of open-mindedness is openness to the possibility that seemingly unrelated avenues may yield insight: 'A discipline with only a tangential interest in the problem at hand may hold a critical insight into its solution' (Szostak, 2017).

People who respond creatively to crisis situations will, according to organizational scholars, adopt ‘open-minded approaches, such as ferreting out bad news early and nurturing their own scepticism’ (Pearson & Sommer, 2011). Organizational scholars’ advice for creatively dealing with crises includes multiple points related to seeking out difference: ‘Start with oblique perspectives and discuss them thoroughly; Stay open to diverse sources and exotic challenges; Don’t get too comfortable with success’ (Pearson & Sommer, 2011). Descriptions of exceptionally innovative thinkers report a specific action that nurtures scepticism: Many outside-the-box thinkers seek out people with whom they know they disagree to be their closest colleagues—their trusted advisors and co-problem-solvers (Grant, 2017). Exceptionally innovative thinkers know that continuous thoughtful critique will strengthen their ideas.

There are potential complications with seeking out scepticism; perhaps the most notable relates to power differentials. Certain fields, and the paradigms that underlie them, dominate in academia; for those in subaltern fields, inviting criticism from dominant
perspectives could damage a research endeavour in others’ eyes. This could have implications for funding and other forms of institutional support. Thus in certain situations, participants in an idea-sharing exercise may need to agree at the outset on a framework of mutual respect and mutual open-mindedness. With these considerations in place, the importance of seeking out divergent ideas is well established, particularly in the literature on inter- and transdisciplinary research. This strategy thus intertwines with the strategy ‘Embrace teamwork.’

2.3.2 | Relevance for MVN research

In MVN research, nurturing scepticism should come somewhat naturally because scepticism is a central tenet of much academic thinking. Indeed, and in line with the point above about frameworks of mutual respect, advice on interdisciplinary work often includes the need to hold back academic tendencies to critique, critique, critique to make space for other ways of knowing (Strober, 2010). Perhaps creative approaches can offer ideas for how to allow for fruitful multi- and interdisciplinary exchange—exchange that nurtures and celebrates healthy scepticism but does not create divisions or reinforce power hierarchies.

Open-mindedness may manifest in at least two ways in MVN research. One is a willingness to get zany or edgy when generating new ideas. The ‘Innovation Genome Project,’ from the Silicon Valley firm Autodesk, explored scores of world-changing inventions throughout history (e.g. the written word, the microscope, the worldwide web). Based on its categorization of the principles involved in each innovation, the project offers ‘7 Essential Innovation Questions’ that can serve as helpful fodder for open-minded brainstorming (O’Connor, 2012; Table 4). The idea behind these questions is not to get hung up on a field’s established way of doing things or the fact that certain questions may seem irrelevant; it encourages us to simply push past that discomfort and experiment with possible relevance. Another possible manifestation of open-mindedness is

| Technique                                                                 | Reference                                                                 |
|--------------------------------------------------------------------------|---------------------------------------------------------------------------|
| Use various proxies for CES, for example, moorings in harbours; entries in citizen-science databases | Allan et al. (2015)                                                       |
| Co-create, with Indigenous community representatives, a measure for a river’s ‘spiritual quality’ that includes the river’s sound, appearance, smell and feel, for example, sounds of water and birdsong, visible currents and pooling that align with seasons, and wadeability | Satterfield et al. (2013)                                                  |
| Record semi-permanent ‘manifestations’ of CES in landscape, for example, benches, trail signs [Note: Evidence of ‘tending’ could be seen as a manifestation of RV; these were framed as about CES] | Bieling and Plieninger (2013)                                              |
| Record impermanent manifestations of CES, for example, ceremony remnants | Unnikrishnan and Nagendra (2015)                                          |
| Analyse stories written about a place                                     | Bieling (2014)                                                            |
| Analyse historical documents and/or photographs for evidence of CES     | Szücs et al. (2015), Thiagarajah et al. (2015)                             |
| Analyse photographs posted to social media                               | Oteros-Rozas et al. (2018), Van Berkel et al. (2018)                      |
| Measure artistic inspiration via references to nature in popular music or Japanese children’s songs | Coscieme (2015), Katayama and Baba (2020)                                  |
| Create poems from interview transcripts; share poems and collect responses | Fernández-Giménez (2015)                                                  |
| Convene workshops to develop entire place-based typologies of cultural ecosystem services and possible indicators of them | Pascua et al. (2017)                                                      |
| Apply Graph Theory Network Analysis to social media hashtags           | Ruiz-Frau et al. (2020)                                                   |
| Combine hedonic pricing methods (monetary) with survey-based assessment of eudaimonic well-being | Spanou et al. (2020)                                                      |
| Use deliberative democratic monetary valuation                          | Orchard-Webb et al. (2016)                                                |
| Integrate storytelling with deliberative monetary valuation             | Kenter, Jobstvogt, et al. (2016)                                          |
| Use an arts-led dialogue to understand social values of ecosystems      | Edwards et al. (2016)                                                     |
| Compare values of different land use (forest vs. pasture) for different social groups, for example, conservationists, ranchers | Hoelle (2018)                                                             |
| Compare results from Travel Cost Method with biophysical measurements of water clarity | Keeler et al. (2015)                                                      |
| Provide participants with a set of stickers labelled with different values and different ‘point amounts’ for each value. Participants can place stickers on map | Brown and Raymond (2007)                                                  |
| Compare Tweets posted in urban greenspace to those posted outside greenspace | Schwartz et al. (2019)                                                   |
humility. In MVN research, this means recognizing the immensity of what we do not know or understand; this recognition leads to openness to new ideas from diverse sources. As geographer Natalie Koch (2020), emphasizing the importance of humility and deep listening in research, writes: ‘insights so frequently come through chance encounters and unexpected corners’ (p. 62–63).

2.3.3 | Suggestions for MVN research

1. Use the ‘7 Innovation Questions’ (Table 4) to seed brainstorm sessions about ways to represent, elicit or deliberatively form the multiple values of nature. Since many of the questions focus on how to make, use or do something differently, these questions pair nicely with the strategy of building on others’ work to create something new.

2. Use fanciful brainstorming prompts to generate wacky ideas for how to characterize MVN. (The next section discusses how to refine these ideas.) For example: How would you approach this problem if … you had to spend US$1 million? … you were in a science-fiction story? … you were 5 years old? The lack of obvious connections between these prompts and MVN is precisely the point.

3. Actively seek input from people with different perspectives. If you focus on discursive methods, seek a quantitative researcher. If you think monetization degrades value, seek an economist. The latter may be particularly unpopular in the MVN field, given its efforts to develop non-economic options for environmental valuation, but it might result in unforeseen benefits.

2.4 | Don’t use only words

2.4.1 | Details from the creativity literature

That the creative person’s workspace as an explosion of drawings, large and small, diagrams on black- or whiteboards, sticky-note agglomerations, and magazine cut-outs, may be a stereotype. If so, it is for a good reason: Using forms of expression in addition to words allows us to think and convey things that words have trouble capturing.

Nested within this theme is another strategy for creativity: In Kleon’s words, ‘Step away from the screen’ (Kleon, 2012). Computers encourage all but the most graphical-design-software-adept humans to think and express themselves in words; after all, Kleon notes, first-generation computers were called ‘word processors.’ Kleon emphasizes his point by quoting John Cleese: ‘We don’t know where we get our ideas from. What we do know is that we do not get them from our laptops’ (Kleon, 2012). Kleon recommends having two workspaces: one analogue and one digital. The analogue space is for generating ideas, and the digital one is for refining them.

| Principle | Questions | Example permutations for MVN research |
|-----------|-----------|---------------------------------------|
| Look      | What could we look at in a new way, or from a new perspective? | How to use social media, a giant new source of continuously refreshed potential data, to help us understand MVN? (Schwartz et al., 2019, e.g. Rossi et al., 2020, Ruiz-Frau et al., 2020) |
| Use       | What could we use in a new way, or for the first time? | How could we use technology perfected for remote work during COVID-19 to facilitate new forms of public discussion about MVN? |
| Move      | What could we move, changing its position in time or space? | How could we use ideas, techniques and principles that were developed as part of ancient Athenian democracy to characterize MVN? |
| Interconnect | What could we interconnect in a different way, or for the first time? | How could we link Native Hawaiian ho’oponopono (an approach to conflict resolution) with deliberative approaches to valuation? (Gould et al., 2019) |
| Alter     | What could we alter or change, in terms of design and performance? | How could we change centuries-old annual ‘town halls’ in the Northeastern USA to allow for explicit discussion of shared values and value conflicts? |
| Make      | What could we make, creating something that is truly new? | What new physical structure or object might facilitate more effective characterization of MVN? |
| Imagine   | What could we imagine to create a great experience for someone? | How could we reimagine decision-making institutions to incorporate and steward pro-sustainability MVN? |
Creating visualizations can be an important part of the creative process—and a part that benefits hugely from stepping away from the screen. Drawing and using physical objects engage different parts of our brain than does language-focused writing (Ulibarri et al., 2019). Szostak (2017) points out that a hallmark of creative approaches is that they combine conscious and subconscious processes. He writes: ‘Creative insights generally emerge in the form of imagery: We picture our creative solution in some way’ (Spooner, 2004), likely because our subconscious operates sublingually’ (p. 23).

Diagramming, drawing or making a physical model of research ideas thus can yield new insight (Ulibarri et al., 2019). Of course, visualizations can also be powerful ways to communicate research findings; Edward Tufte’s famous work in this regard provides scores of examples of the potential power of visualizations (Tufte, 2001; Tufte et al., 1998).

2.4.2 | Relevance for MVN research

MVN research can apply this strategy in at least three ways: To the process for developing methods for understanding MVN, to the methods themselves, and to how results and conclusions are shared.

First, researchers can use non-verbal techniques to develop ways to characterize MVN. The discussion above centres on this process-based point—on the idea of using visualizations to encourage a creative research process.

Second, this strategy provides inspiration to think about non-word-focused ways of exploring MVN. Much MVN research uses words to convey and representing meaning, for example, through interviews, surveys, stories, and text-based social media posts. Yet past MVN research also provides numerous excellent examples of non-verbal methods. Some of the entries in Table 3 fall into this category. Many values researchers have used photographs (from, for example, social media or historical archives). Others have used songs, poetry and ‘manifestations’ in the landscape to characterize MVN (Table 3). In addition to examples in Table 3, mapping is an obvious, and very well-developed, nonverbal way to collect and represent data on MVN and is often used in concert with other techniques (Cheng et al., 2019; Gould, Morse, et al., 2019).

Third, this strategy encourages us to ask: How can we share the results of MVN research in ways other than writing or speaking? It might inspire ways of sharing research that reach new audiences or reach audiences in new ways. A hula show collaboratively designed to share results of research on forest-related values in Hawai‘i provides an example (see www.researchspeaks.org).

2.4.3 | Suggestions for MVN research

1. Consider non-verbal approaches in multiple dimensions and phases of the research process. How might non-verbal approaches be helpful, for example, in how we elicit values, how we characterize values or how we convey our ideas and conclusions?

2. Build on the economics-based idea of revealed preferences: What can we learn about values by what we see in the world? Although there are complications with using observable phenomena as proxies for value (e.g. due to institutional barriers that preclude some expressions of value), research could integrate consideration of these complications.

3. Reflect on your work from a less-verbal, screen-free perspective: Diagram different aspects of your MVN research. You could draw the primary viewpoints you wish your research to explore or the steps you will take to analyse the data. You could pictorially convey how your research draws on theory or represent the process by which decision-makers interact with your work.

3 | ITERATE AND ‘FAIL EARLY, FAIL OFTEN’

3.1 | Details from the creativity literature

Quick, dynamic iteration is a pillar of design thinking, and one of the most repeated tenets of design thinking is to ‘fail early, fail often’ (Ulibarri et al., 2019). These two points are integrally related. The perhaps counterintuitive pro-failure statement aims to encourage experimentation, risk-taking, early sharing and the willingness to let go of ideas that are not working. As Aslan et al. (2014) write, ‘an experimental prototyping approach allows failing ideas to be reworked or pruned judiciously [i.e. “failing often to succeed sooner” (Catmull, 2008)’]’ (p. 348, citation original). The core idea is that if we are willing to share our ideas early on, we can figure out if an idea is worth developing before investing extensive time into it. We can get feedback and make tweaks—including ‘pruning’ features or possibly entire approaches—then iterate with a new and improved version. In aggregate, this process allows us to produce more ideas and more better ideas, which increases the chances that one of them is really powerful.

Kleon writes: ‘One time I was up late on my laptop and my wife yelled at me, “Quit picking fights on Twitter and go make something!”’ (p. 105). This advice, even when not yelled and when not in reference to Twitter specifically, also relates to iterating and ‘failing early and often.’ It implicitly recognizes that it can be easier to criticize than to create. It encourages us to, at some point, stop finding problems and try to offer responses—to just ‘make something.’ Kleon shares a quote by Andre Torrez: ‘Complain about the way other people make software by making software’ (p. 107). We could apply this to MVN as: Complain about existing valuation mechanisms by creating new valuation mechanisms.

3.2 | Relevance for MVN research

Current valuation mechanisms have many shortcomings, and it is arguably an important task for academics to critique those current
mechanisms. Creativity research argues that in addition to critiquing, we should also be ‘making things’ by offering alternative tools, approaches or scenarios for valuation. This is likely particularly important for areas where critiquing is high, but the tools and methods available are limited.

In design work, offering innovative options is often called ‘prototyping’. Creating a version of a ‘product’ (in research, this would be an idea, approach, method, etc.) and trying it out to see how it goes. One way of interpreting innovative efforts at valuation (e.g., a place-based approach to represent value in a novel way) is that they are prototypes: Researchers trying something and sharing its benefits and drawbacks. Table 3, again, offers a sampling of approaches that researchers have recently offered. Considering these approaches as prototype-like examples of creative efforts mends well with the second strategy above: To be inspired by previous work. If MVN researchers build up on the growing repository of previous research, the field is collectively iterating, and thus continuously improving and innovating.

During the process of prototyping, Ulibarri et al. (2019) encourage iteration between two types of thinking: divergent and convergent. Divergent thinking is brainstorming; it throws caution, feasibility and critique to the wind. Divergent thinking expands and goes crazy. Convergent thinking is logical; it involves questioning and considering constraints. Convergent thinking refines ideas.

### 3.3 Suggestions for MVN research

1. Iterate between divergent and convergent thinking. Divergent thinking can help to create zany ideas for how we might characterize MVN (see previous section); convergent thinking can then address ethical issues, decision-makers’ and researchers’ needs and constraints, and other necessary considerations.
2. Implement new ideas with an attitude of prototyping: Make an effort, then pay attention to what worked well and what can be improved. By publishing these efforts, we can consider the prototype the property of the global community: We are all trying to prototype the property of the global community: We are all trying to improve. By sharing how it went. This allows us to continually and collectively build on what others have done.
3. In transdisciplinary work, connect with partners who may use research results to share ideas for data collection methods at an early stage—when the ideas are not yet fully formed. Consistent with approaches to knowledge co-production (Miller & Wyborn, 2018; see strategy below), get feedback and co-design data collection mechanisms with those who may use them.

### 4 EMBRACE TEAMWORK

#### 4.1 Details from the creativity literature

This final strategy intertwines with the previous strategies. Collaboration figures prominently in most descriptions of creative approaches. Organizational scholars list the need to ‘get comfortable with broad collaboration’ as one of the central practices of creatively dealing with crises (Pearson & Sommer, 2011). Kleon reminds us that ‘geography is no longer our master,’ and encourages us to create a professional community based on interests. Ulibarri et al. (2019) list teamwork as one of the core conditions that foster creativity. They note that ‘while society tends to laud the individual creative genius—the writer, the painter, the entrepreneur—creativity is a sociocultural process, and most great works and innovative breakthroughs are the result of a team’ (p. 120).

In the realm of research specifically, teamwork—and particularly work with diverse teams—is probably the most foundational strategy for creativity. Research demonstrates that diverse teams offer multiple benefits; foremost among those benefits is that more diverse teams develop more innovative solutions (Page, 2008, 2017). Teams are more likely than individuals to develop new ways of solving problems (Moirano et al., 2020). In a connection to the strategies related to the importance of defining problems and naming assumptions, Zavaleta et al. (2017) write: ‘Embracing multiple facets of diversity ... challenges us to regularly revisit and reimagine our assumptions and perceptions (Taylor, 2014)’ (p. 247, citation original).

#### 4.2 Relevance for MVN research

The benefits of diversity are particularly strong in work, such as that on MVN that aims to understand and represent varied life experiences and cosmosvisions. In MVN research, many dimensions of difference are likely relevant: disciplinary training; geographic and cultural background; socio-economic status; interests and lifestyle; and extent and type of engagement with decision-making (Moirano et al., 2020; Zavaleta et al., 2017). Related to the last dimension, in MVN research it may be particularly important to be not only interdisciplinary, but transdisciplinary—that is, it may be important to integrate not only across disciplines, but also beyond the boundaries of academia to involve decision-makers and communities of various kinds.

Co-production is often considered the lynchpin for making research relevant to global challenges (van der Hel, 2016). Although co-production has roots in multiple divergent fields and multiple meanings, at its core it denotes a joint creation of knowledge by researchers and non-researchers (Miller & Wyborn, 2018). Scholars in the health field highlight the transformative potential of co-production; they suggest that it can be ‘a generative process that produces new interactions and forms of knowledge and that can lead in turn to meaningful ways of shaping and taking part in health care’ (Filipe et al., 2017). If, for the purposes of this paper, we replace ‘health care’ with ‘MVN research,’ then this sentence captures the core of how embracing transdisciplinary teams can foster creativity and generativity—through ‘new interactions and forms of knowledge.’

The teamwork strategy is particularly appropriate for the types of grand challenge that MVN research aims to address. It is very clear that one person alone will be unable to address all of the issues
that confront our planet, so we need to work together. We need all hands on deck, and we need all brains and viewpoints on the issues. Most research on MVN already draws on the power of collaboration; this strategy can serve as a reminder to continue, and perhaps continue to expand, that practice.

Despite their myriad benefits, team-based processes also have shortcomings, particularly as related to power dynamics. An extensive body of research from multiple disciplines details the complex concerns of power that infuse collaborative processes, and environment-focused scholars have synthesized this work and highlighted its particular relevance for environmental management and valuation (Jacobs et al., 2016; Turnhout et al., 2020). This work suggests the importance of ‘re-politicizing’ collaborative, and particularly co-production, processes by allowing pluralism and competing views (Turnhout et al., 2020).

4.3 | Suggestions for MVN research

1. Create opportunities for researchers interested in or working on MVN to share their ideas and work. An example of this is the 2020 British Ecological Society symposium, which brought together scholars and practitioners from diverse backgrounds to share their work and discuss MVN research and practice.

2. Leverage technology to connect with a global research community and jointly create new ideas, methods, tools and opportunities. Use the burgeoning tools available for remote interaction to facilitate connection across geographies. Consider remote symposia, both synchronous and asynchronous, in addition to in-person opportunities.

3. Create extended teams that involve people not focused on MVN research. Transdisciplinary teams might especially seek to involve decision-makers. Interdisciplinary teams might include ecologists and (as discussed above) economists. The input of team members who are not conducting detailed MVN research work may provide valuable direction and insight.

5 | CONCLUSION

In this paper, I argue that using strategies discussed in scholarship on creativity can render MVN research more innovative, inclusive, robust and potentially transformative. Yet this call for creativity in MVN research requires important caveats. One caveat is that making progress on complex issues requires a mix of novel, radical approaches and traditional, existing approaches. In other words, research on MVN cannot only be creative and innovative; it must also work with our current realities. A related caveat is that the effectiveness of creativity in facilitating a broader array of values to enter the discussion is only one aspect of a complex system. Creating new ways to characterize and incorporate values does not mean that decision-making will necessarily include a more inclusive suite of values. One crucial factor that will impact ‘uptake’ of new approaches to valuation is power dynamics, which may silence or obscure certain viewpoints (Rawluk et al., 2019). Another factor, one often deeply intertwined with power dynamics, is whether decision-making structures allow diverse forms of value representation.

Importantly, these factors (and values themselves) are not independent; evidence increasingly demonstrates that methods for characterizing value, values themselves, power dynamics and decision-making structures are not entirely separate (Kenter et al., 2019). If researchers (often via transdisciplinary partnerships) can develop new ways of representing value, for example, decision-making structures may evolve in response. Perhaps even more fundamentally, the processes we use to elicit, discuss and demonstrate values can be involved in forming, or at least crystallizing, values. As researchers think creatively about MVN research, it may be particularly important to consider ways of understanding value that recognize these powerful and important interactions and what they mean for MVN research. Perhaps the most crucial point is to recognize how innovative and varied valuation approaches have the potential to increase equity and justice in environmental decision-making—because characterizing diverse values, which can increase epistemic and other forms of justice (Himes & Muraca, 2018), may require novel methods.

A final point revisits the distinction between divergent and convergent thinking. The full creative process is not only about zany ideas and thinking without boundaries. Creativity involves both divergent and convergent thinking (Ulibarri et al., 2019), also called lateral and critical thinking (Newman-Storen, 2014). Creativity, again, involves both novelty and utility; it requires making new connections and generating something new, but also applying discernment to refine ideas so that they are useful. Ulibarri et al. (2019) discuss ‘the interplay between the imaginative, lateral thinking that goes into developing a good research question and the rigorous analysis necessary to test that question’ (p. 10). This is a core practice of academia: generating new ideas, then subjecting them to rigorous criticism and testing. In many ways, this paper is a reminder for the MVN field of the first aspect of our pursuit; it is a call to not short-change the creative, think-outside-the-box side of that process. A combination of broad, expansive thinking and refined, targeted thinking can create a rich suite of approaches that can move the world further towards incorporating the multiple values of nature into decision-making and addressing the wicked problems that face our planet.

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I am an Associate Editor for People and Nature, but I was not involved in the peer review and decision-making process for this paper.

DATA AVAILABILITY STATEMENT
This manuscript does not draw on any data.

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