Making it Personal: The Ways in Which We Communicate Sustainability, and How to Target the Individual Using Effective Language

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Abstract

This paper will provide a detailed review of tactics that should be employed in sustainability communication with the final goal of targeting individual behavior change. Three major areas of communication are to be examined: 1) using an individual's cultural identity as an access point to sustainability education on a values-based level, 2) navigating scientific language and the social role one must fill to understand it, and 3) the advantages of a narrative-based approach in sustainability communication. These three areas may seem divided, but through applied research I hope to make a case for their interconnectedness. Ultimately, I will prove that through a strategic synthesis of each area discussed, we can improve the language used to communicate sustainability and elicit tangible results from the individuals who listen to it.

Introduction

Written and spoken language are undeniable foundations to learning. Since our primitive beginnings when the advent of speech propelled us to the top of the food chain, ever-evolving disciplines have been formed to study the intricacies of language and the effectiveness of the words we use. Poets spend their lives agonizing over which words are right–allowing endless emotions to be evoked from a single concentrated line. Editors comb through literature, playing a delicate game of jigsaw with syntax and diction to most efficiently convey ideas. There is much to be gained from the proper use of language, and conversely, there is also much to be lost with misuse. The discussion of climate change is not immune to the delicate nature of language, and how we are communicating with the general public about this critical issue has been the subject of increased interest within the sustainability community. Climate change, global warming, and climate crisis will be used interchangeably throughout this paper to refer to the human-caused increase in our planet's temperature and resulting natural disasters amongst other climate effects.

I believe that as scholars and teachers of sustainability, we find ourselves at a perilous intersection at this point in time. We must act quickly and collectively to attempt to mitigate the problems humanity has built for itself– but how do we best communicate this sense of urgency? In a time where the average American spends 11 hours a day consuming media[1], how do we get through to their analytical thinking? The answer is multifaceted, but to put it simply, we must make every word count. Through

[1] "People Spend Most of Their Waking Hours Staring at Screens - MarketWatch."

research for this capstone project, I have landed on three major areas of focus that will aid scholars of environmental sustainability in reaching average people who are neutral actors at this point, and eliciting behavioral change that aligns with scientifically proven methods of climate crisis mitigation.

The first area of focus is based on cultural cognition. There are many layers of identity that individuals consider when making decisions to align themselves with certain ideals. Particularly in the case of divisive politics, like some consider climate change to be, it is critical to communicate in tactful ways that do not threaten one's cultural identity. Doing so pushes them to "choose a side" rather than encouraging them to engage with science and make decisions based on knowledge. This idea and others, such as the role of religious affiliations, will be further examined later in the paper. The second area of focus is aiding in the average person's comprehension of science by simplifying language and avoiding jargon in an effort to make these essential facts more accessible. In order to avoid confirmation bias wherein readers interpret complex scientific figures incorrectly to support their own predetermined opinions, there must be a system that mitigates the knowledge gap between researchers and the general public. And finally, the third area of focus is that of narrative productions and the employment of storytelling as a vehicle for climate crisis discussion. There is evidence to support the use of narratives as a simpler way to convey critical information, and importantly embed it into personal lifestyles and local environments in such a way that sustainability becomes an individual responsibility. A discussion of the polysemic qualities of the word "responsibility" and ways in which language can award agency will complement this section as the final suggestion for improvements to current sustainability communications. As both an English and Global Sustainability major, I hope to supplement the work of other scholars expanding the field of ecoliteracy and sustainability language by synthesizing these ideas into a malleable, useful set of guidelines that could be applied to any field of study in or outside of climate change mitigation. My personal work experience and academic pursuits have provided me with an adequate foundation to explore these questions, and I am excited to share my findings with you.

Communication will never be an irrelevant part of decision making. The stakes are too high to allow for missed opportunities with the language we use. Using the improvements proposed in each area discussed, scholars can increase the salience of our messages and therefore elicit effective behavioral change.

1. Context and a Case for Individual Responsibility

Before diving in, there is some groundwork to be laid. This project works off of the premise that individual behavioral change is necessary to mitigate impending climate disaster. There is conversation

amongst sustainability scientists and scholars about the usefulness of individual action versus collective action. Individual action would include things like taking shorter showers, recycling and composting household waste, or biking to school instead of driving. Collective action looks more like top-down policy changes, like the banning of single use plastic bags across states, or organized rallies of environmentalists calling for carbon emission caps on large corporations. The crux of this debate lies in the logic that on the micro level, the individual curbing their own emissions is scientifically negligible once the calculations are completed–so basically, it does not 'matter' if you personally do all you can to live sustainably. Collective action, some claim, is the most worthy cause for our efforts because it forces change on a much grander scale.

This discussion could be a capstone project of its own, but whether you find yourself falling on one side or the other we can all agree that some sort of action is needed. After three years of environmental study at the University of Virginia, I have encountered this discussion often and through research of my own I find myself falling on the side of individual behavioral change. I believe that in order to create collective action that sticks, we must make the issue of climate crisis personal for everyone and begin a larger scale culture shift at the individual level with behavioral change. My capstone is born largely out of this belief, and how language can act as an indispensable tool to implant this knowledge in average households.

Next, we must establish that contemporary language has proved inadequate in most efficiently conveying this knowledge. This is also to imply that communication is the only problem we are encountering in climate mitigation, as it is certainly not, but it is a part of the problem that can be fixed with minimal effort to result in maximum impact, so it is worthy of our attention. It is difficult to isolate any one method of communication and point to it as having failed up until this point, but there are some basic metrics of climate crisis understanding that will help us. As of April 2019 (we are waiting for the 2020 report), about seven in ten Americans think global warming is happening (69%), and only about one in six Americans think global warming is not happening (16%)[2]. These are pretty strong numbers–however we begin to see there is a knowledge deficit when we read that only about one in six (17%) understand how strong the level of consensus among scientists is (i.e., that more than 90% of climate scientists think human-caused global warming is happening)[3]. This knowledge deficit is linked to communication and individual action when we learn that three in ten Americans say that, if asked by a person they like and respect, they would contact government officials about global warming (33%),

[2] Leiserowitz, A., Maibach, E., Rosenthal, S., Kotcher, J., Bergquist, P., Ballew, M., Goldberg, M., & Gustafson, A. (2019). Climate change in the American mind: April 2019. Yale University and George Mason University. New Haven, CT: Yale Program on Climate Change Communication. doi:10.17605/OSF.IO/CJ2NS, 4.
[3] Leiserowitz, A., et. al, 2019, 4.

however only 11% of Americans have actually taken these actions in the past year[4]. Communication between trusted peers, as proposed in this hypothetical, is crucial to inspiring individual action, which is an idea we will revisit–but the statistics show us that these conversations are not happening, and therefore the impact it could have on higher bodies of power are not reaching their potential. Language that mobilizes action is something I look to use in my own interactions with my friends, family, and classmates, and it is through these conversations that I have developed my own vocabulary set and narrative framework to convey my message. As one can tell from the 69% of Americans who think global warming is happening, scientists and climate activists are making great progress in achieving a consensus of opinion. Communications must evolve with this increased acceptance of fact, so instead of persuading the public to believe in climate change there is now a focus on persuading believers to engage with their communities and change their actions. Attempting to do this within my own social circles has proven to be a challenge, and it is out of these frustrations that I saw a need for more systematic and foundational tools that myself, and other scholars of sustainability, could use going forward.

2. Cultural Identity as an Access Point to Individual Values

So much of personhood comes from the people, environments, and cultures that surround you. As a malleable sponge of a child, we absorb the values of those around us before we have a robust moral code of our own with which to make decisions. Some people do not have the motivation, or the opportunity, to seek out alternative cultures or epistemologies to settle themselves in. This portion of our population especially would benefit from targeted knowledge campaigns tailored to build upon existing values and use them to our advantage in an effort to elicit individual behavioral change in support of environmental sustainability. Similarly to the way Google and major search engines collect our data, understand what our interests are, and cater ads to our personal profile, climate activists, scientists, and media must begin to take these extra steps in order to deliver the most activating message they possibly can.

In his paper titled, "*Climate-Science Communication and the Measurement Problem,"* Dan Kahan writes about cultural cognition of climate change and how to identify between these two parallel responses to climate-science: 1) collective-knowledge acquisition, the scientific pathway, and 2) cultural-identity protective, which incorporates our personhood [5]. Kahan proposes that when we engage

[4] Leiserowitz, A., Maibach, E., Rosenthal, S., Kotcher, J., Bergquist, P., Gustafson, A., Ballew, M., & Goldberg, M. (2019). Climate Activism: Beliefs, Attitudes, and Behaviors, November 2019. Yale University and George Mason University. New Haven, CT: Yale Program on Climate Change Communication.
[5] Kahan, "Climate-Science Communication and the *Measurement Problem*,"2.

with climate discussion, educators must consider both of these gates to true acceptance and understanding. Here we are interested in the cultural-identity protective, which is the part of our identity that responds to divisive questions with what we are meant to represent and believe in as opposed to what we actually know. He states that, "If one wants to measure what people have used their reason to discern about the science of climate change, then one has to be sure to use a form of assessment that does not threaten their identities"[6]. Pitting these two reasoning processes against each other results in a cultural status competition that makes it impossible for diverse citizens to express their reasons for backing what they do. For instance, there is fault found in the language of the question whether you "believe" in climate change. Is it possible for someone to believe in scientific evidence, which is objectively correct? Posing this question as such unknowingly asks not just someone's opinion of the evidence, but rather where their cultural alliances lie. Incessant questioning and berating of scientific facts does not take these cultural nuances into consideration and fosters animosity between groups, as it is near possible to avoid cultural identity acting as a function of your attitude towards climate change. His solution to avoiding this divisive thinking is to amp up scientific education so adults will have the critical reasoning skills to draw their own conclusions from science, as well as the cognitive perception to understand which questions need attention, and finally the intrinsic motivation to explore such questions on your own accord [7]. Our aim should not be to convince students, or adults, of what they should "believe"– what side of climate science reasoning they fall on – but rather we should aim to teach them skills of analysis to understand why scientists compare alternative hypotheses and how they reach their conclusions.

Language that can help us, Kahan posits, removes the need for listeners to choose between both reasoning paths. As stated before, bombarding citizens with information only emphasizes the cultural polarization between sides. But, leading with clauses that disentangle cultural identity and give agency to somebody besides the listener when reporting stark facts helps. Leading clauses like, "according to the theory of evolution" or "climate scientists believe that…"[8] achieve this on a micro level, but we must continue to work towards making this practice perform on its own in the world. This is in application to students and learners of the world– but culture can apply to myriad other institutions and social groups. Where I believe this thinking will attain the most impressive results is the realms of spirituality or religion, politics, and generational gaps. For a student, leading clauses attributing knowledge to scientists achieves adequate expertise to be accepted by all. However, cultures, and especially religions, carry with

[6] Kahan, "Climate-Science Communication and the *Measurement Problem*," 26.
[7] Kahan, "Climate-Science Communication and the *Measurement Problem*," 3.
[8] Kahan, "Climate-Science Communication and the *Measurement Problem*," 30.

them specific authority figures that imply credibility beyond the words of a distant and mysterious scientist.

More Americans subscribe to the teachings of Christianity than any other religion by an overwhelming margin [9]. Historically a more conservative faith than some others, practicing Christians are not known to be champions of climate change awareness. This short study conducted by postdoctoral students at Yale's Program on Climate Change Communication tested the effectiveness of religiously coded climate science communications on self-identifying Christians. Building off of the foundation that researchers suggest climate communication should "activate certain emotions and strategically frame the issue to align with the value's of one's audience," [10] they targeted the Christian belief that humans are "stewards of the Earth" on the planet to "protect God's creation" and created a pro-environmental message laid in the framework of biblical phrasing. An example of snippets reads as, "God made humans responsible for taking care of His creation" and "We can use nature for our benefit, but it is not okay to destroy God's garden that he entrusted to us" [11]. Using language familiar to the bible and other preachings, we find an access point to the pre-existing values of Christianity already instilled in the subjects that we can use to our advantage in climate mitigation messaging. They also utilize, perhaps unknowingly, a narrative structure that will be explored later referred to as "victim-to-hero" character development in just the short sentences seen here. By gifting agency to the reader as a responsibility awarded to them by God, we use a trusted authority figure to deliver a critically important message while allowing them to lean into the earlier responses explored by Dan Kahan – cultural identity protectiveness and collective knowledge acquisition – and actually utilize both to reach their own conclusion that benefits mutually from their knowledge of scripture as well as their understanding of the current climate crisis. Their final findings showed that Americans were not only willing to view climate change through a religious lens, but also that in doing so their belief of climate change as compared to before reading the message had strengthened [12].

The next component of this cultural cognition discussion is the importance of interaction and knowledge diffusion between people in similar cultures and communities. As we will discuss in the next section, the interplay of climate research and the public sphere is a key constraint on current climate understanding,[13] but so is the interplay between friends, family, colleagues, and smaller social groups. About six in ten Americans (63%) say they "rarely" or "never" discuss global warming with family and

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[9] Pew Research Center, "Religion in America."
[10] Goldberg et al., "A Social Identity Approach to Engaging Christians in the Issue of Climate Change," 443.
[11] Goldberg et al., "A Social Identity Approach to Engaging Christians in the Issue of Climate Change," 450.
[12] Goldberg et al., "A Social Identity Approach to Engaging Christians in the Issue of Climate Change," 458.
[13] Von Storch and Krauss, "Culture Contributes to Perceptions of Climate Change," 2.

friends, but about half of Americans (51%) say they hear about global warming in the media at least once a month[14]. This finding illustrates the critically lopsided nature of sustainability discussion, as it mostly occurs as a one-way channel from media to individual, and almost never as a discussion amongst equals. The effects of this distancing have been profoundly destructive to contemporary beliefs towards climate change, and a case must be made for climate conversations between friends and family, and how this enters individuals into a "proclimate social feedback loop" [15]. Personally, I am keenly aware that I would not be the sustainability advocate I am today if it were not for the values my parents ingrained in my own life from a young age. Having grown up in a very green household, and simultaneously socializing with many aggressively *not* green households, I have experienced firsthand the irresistible urge to educate my friends–and when some of these friends shifted their habits due to my gentle chiding, this argument was proven not only to be true, but swiftly successful. It is certainly one of the more straightforward tactics, and something you have likely experienced as well. Studies find that when people less engaged with climate change enters into a discussion of it with friends or family, they are likely to be more receptive than if someone outside of their social circle were to repeat an identical message[16]. It is crucial to include at least a little bit of scientific evidence, such as the overwhelming scientific agreement that climate change is occurring (97%). This language offers you credibility, and is extremely important in establishing a connection to real-world discussions that will perhaps push your friend or family member to seek out confirmation of this fact, or information of their own.

Finally, we will discuss an often ignored statistic: that of second-order beliefs. Second-order beliefs are beliefs that individuals have about the beliefs of others–very meta. There is a general *egocentric bias* in the way that individuals make judgements about the beliefs of others, particularly the beliefs of people who they perceive as similar[17]. To put it plainly, people generally underestimate the incidence of contrasting beliefs, and simultaneously overestimate the incidence of similar beliefs to theirs in most things–and especially in climate change divisions. The false belief that your peers feel similarly to you quells motivation to evolve your opinions and allegiances. It is a self-perpetuating cycle where you think those closest to you share the same views, but also that those starkly outside of your circle are more dramatically polarized and against you than statistics show. Confirmation bias, the tendency to interpret new evidence in support of one's existing beliefs, is a cornerstone limitation to particularly divisive politics. The media may exploit this tendency in the vulnerable public by misrepresenting scientific data to push their own agenda. Without opening up the "fake news" can of worms, here is an example of such

[14] Leiserowitz, A., et. al, 2019, 4.
[15] Goldberg et al., "Discussing Global Warming Leads to Greater Acceptance of Climate Science," 1.
[16] Goldberg et al., "Discussing Global Warming Leads to Greater Acceptance of Climate Science," 2.
[17] Mildenberger and Tingley, "Beliefs about Climate Beliefs," 5.

misrepresentation. In May of 2008, reputable meteorologist, oceanographer, and climate change "believer" Mojib Latif released a study reporting that although greenhouse gas concentrations were still rising, we may experience a pause in mean global temperature increase. This is typical of cyclical climate trends, but skeptics seized on the findings as evidence that climate change was a hoax, and likened it to "the Pope suddenly announcing the Catholic Church had been wrong for centuries about prohibiting priests from marrying" [18]. Scientists must often speak in ambiguous terms, favoring probability over certainty statements as there is little to be 100% sure of in research. This makes them especially susceptible to misinterpretation when they fit certain ideological biases. Unsupported second-order beliefs plague government officials as they do the lay public, and as a result there are policies that do not even make it to public polling because leadership has convinced themselves that an incorrect proportion of citizens already oppose, or agree with their idea. Assuming homogeneity of one's audience, even in cases of distinct polarization, has damaged climate science communication. Looking forward to how language can help us mitigate this misunderstanding, there is a call for promoting greater awareness of the distribution of climate beliefs as opposed to just focusing on feeding the public scientific facts[19]. Fostering understanding of others opens up a dialogue between cultural groups and allows for transparency in motivations of bodies of power. Clearing up these pathways between localized areas as well, like between friends and family as we discussed earlier, allows for apparently polarized groups of believers and deniers of climate change to identify who falls on either side, and focus their attention to the individuals most malleable to change. More succinct language will build trust and openness in communication, which we are lacking with contemporary efforts as we can see from the lack of accurate second-order beliefs. How to make science more digestible to the average person will be key in achieving public comprehension of these concepts, which we will explore in the next section.

3. Navigating Scientific Language and the Socialized Role One Must Fill to Understand It

Climate change is a multidimensional problem, and because there is much at risk there is a desire for scientific evidence to explain, with as much certainty as possible, why we are in our current position. As a result, scientific rhetoric can dominate the conversation, so attention must be paid to the salience of scientific information when it is received by the general public. Scientists give us the gift of prediction when they answer questions average people do not even know to ask. Their reasoning and research is indispensable when exploring the uncertainty of our climate crisis, but sharing these findings with the

[18] Detrani, *Mass Communication*, 214-215.
[19] Mildenberger and Tingley, "Beliefs about Climate Beliefs," 24.

population is a challenge. It is not a scientist's job to communicate their research most easily to the public. Nor is it a politician or writer's job to understand complex experiments or statistics well enough to explain them to readers. Although both parties may be trying their best to do both of these things, it just is not built into their roles and the consequences of buying into everything we read can be disastrous. We can no longer blindly trust that the gap between scientists and writers is being efficiently bridged–there must be a practical system put in place with dedicated individuals, climate communicators one may call them, tasked to support the transmission of information from the scientific community to our own communities. Until this becomes commonplace, there are some tactics we can employ to make technical terms more accessible and to avoid confusing jargon apt to trip readers up.

The stakes are too high in climate communication to allow for ad hoc communication to continue. It is "needlessly risky for scientists to rely on their intuitions about what to say and how to say it," [20] when their findings are informing major decisions, sometimes publicly funded, and subject to scrutiny from everyone with a search engine at their disposal. Fragmentary communications result from incidental conversations between scientists and journalists or politicians relying on this information. As a result, what the press ultimately communicates reflects their own intuitions, and we are left to put together the pieces after two degrees of separation and their independent attempts to tailor it to the other leave the facts unrecognizable from what came out of the lab to begin with. If by "digestible information" we create a broken line of credibility back to the original source, this also hurts our cause, as a small blunder in reporting can discredit an entire article, scientist, or reporter. The answer to this misinterpretation and misrepresentation problem is most simply to streamline pathways of scientific knowledge, and to introduce an intermediary step between scientist and reporter that would translate complex facts and figures into more comprehensive, simple information that remains accurate to the original source. This could be a person, a sophisticated computer program, or a language overhaul that would dispel confusion from the get-go.

In some cases, social scientists are already filling this role, and there is a call for scientists to use resources available to them in translating difficult research for public consumption. A 2018 meeting of the Royal Meteorological Society (RMetS) urged scientists to establish relationships with journalists in order to more accurately brief them[21], or to utilize the Science Media Centre[22], a UK based resource created to quickly funnel expert information to journalists. The Science Media Centre has grown to include many countries and, in addition to workshops and briefings for journalists, it creates a database of science

[20] Fischhoff, "Applying the Science of Communication to the Communication of Science," 702.
[21] Qadir, "RMetS National Meeting - Avoiding Myth, Mayhem and Myopia," 98.
[22] "Science Media Centre."

experts most willing to connect with the media for specific questions. RMetS offered other guidelines for scientists to meet when providing information for policymakers, including that it should "be trustworthy and widely accepted, relevant and comprehensive, clear and simple, and take account of uncertainty and controversy"[23]. These are relatively straightforward solutions and suggestions, and this is just the kind of guidance a national government should provide as a blanket policy on science-to-media transmission of knowledge.

Environmental health findings are especially difficult to convey because alongside their complexity, they carry with them emotional weight[24]. Climate change, sea level rise, pollution, anything you associate with our changing climate is affecting and will affect millions of people. Death and destruction will cause mass human migration, panic, and unforeseeable consequences. Due to the nature of scientific investigation, scientists can rarely speak in absolutes when it comes to probabilities of real-world events. This makes it an even more complicated venture, as research must "reconcile data with society's desire for clarity on scientific issues"[25]. To aid this reconciliation, scientists can provide context and baseline factors to help average people with the scale of risk posed to them at a given point in time. For example "it's meaningless to say that family history of a disease makes a person 10 times more likely to succumb to that disease. It is clearer to say that if 1 in 100,000 people in the general population has the disease, then family history increases the risk to 1 in 10,000" [26]. Risk, along with responsibility, are key terms here. Tactfully emphasizing them so as to not cause undue alarm is a skill developed through the study of language. Subduing unnecessary panic while inciting necessary concern is difficult to do when conveying possibly upsetting information to the public. Two ways to do so is to contextualize risk and to trace responsibility consistently rather than distance actors from it. Often in science, it can be impossible to attribute classic interpretations of "responsibility" to anything as there are no human actors at play. Without something or somebody to hold responsible, the issue floats in a nowhere land and loses significance in the reader's mind as a result of the ambiguity and hinders pathways to problem solving[27]. Responsibility can be conveyed through syntax deliberately just as easy as it can be avoided. Take a look at these very basic phrases: "I emitted the carbon" vs. "The carbon was emitted". You do not have to be a linguist to understand that in the former, "I" acts as the subject and takes ownership of the action, but the latter leaves the subject as the recipient of the action in a classic example of passive voice. These subtle linguistic choices are employed in public messaging to rob us of the opportunity to pin the villain, for lack

[23] Qadir, "RMetS National Meeting - Avoiding Myth, Mayhem and Myopia," 99.
[24] Detrani, *Mass Communication*, 219.
[25] Detrani, *Mass Communication*, 219.
[26] Detrani, *Mass Communication*, 219.
[27] Matzner and Barben, "Climate Engineering as a Communication Challenge," 79.

of a better word, and it is a villain we need to latch on to in order to motivate decisive action. The use of passive voice in climate communications is an area of research that remains largely unexplored, but I believe the effects of its employment are worth looking into.

The final hurdle we will look into when it comes to pitfalls of scientific communication is the widespread use of jargon, and the resulting confusion and estrangement of the public. Broadly, jargon is literally defined as "language that is characterized by uncommon or pretentious vocabulary and convoluted syntax and is often vague in meaning"[28]. Particular to science, it means more specifically "communication designed for highly expert audiences, intended to convey technical information about the state of research across the STEM and medical fields"[29]. Jargon is useful within the scientific community because it can concentrate a complex idea into a single word or phrase, however once it leaves the insulated group of experts it creates uncertainty and emphasizes divisions between scientists and people. Using an excess of jargon creates significant barriers to comprehension and in some cases, the elitist reports, although not intended to exclude, can actively push people away from the point they are trying to prove. Nobody wants to let a piece of writing make them feel inferior. In climate communications, it is critical for our messages to land if we want to elicit the necessary individual behavioral change that will help us save our planet. Unlike other elaborate and particular research projects, climate science genuinely applies to everyone so there is no place for jargon in public releases. Studies support this, finding that communicating scientific information to non-scientific audiences was more effective when using accommodating language as opposed to jargon. Those reading the jargon-filled samples became aware of the "intergroup dynamics at play" between self and scientist, and therefore did not understand or feel motivated to learn more[30]. Climate change disproportionately affects disadvantaged groups, who are also more likely to be less educated in science, so it behooves scientists to disseminate information in plain and simple terms for these populations to properly understand the risk they are in. Using a language that only experts in the field understand defeats the purpose, as one is likely to exclude just the audience that these research materials are most critically needed to reach. Put crudely, "It's not dumbing down [the language]. The only thing dumb is speaking to people in a language they don't understand"[31].

Jargon robs language of its intrinsic significance at times, and can also allow unsavory groups to hide behind the true meaning of their words. For example, "an agency organized for maximum sustainable harvest" is much different than "an agency organized for conservation"[32]. More plain,

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[28] "Jargon | Definition of Jargon at Dictionary.Com."
[29] Shulman et al., "The Effects of Jargon on Processing Fluency, Self-Perceptions, and Scientific Engagement," 2.
[30] Shulman et al., "The Effects of Jargon on Processing Fluency, Self-Perceptions, and Scientific Engagement," 12.
[31] "Want People to Care about Climate Change? Skip the Jargon." | Grist.
[32] Jickling, "Environmental Thought, the Language of Sustainability, and Digital Watches," 173.

traditional words carry cultural significance with them and therefore are more effective at engaging the individual. It is more difficult to get someone (especially who is not an active environmentalist) energized over a catchphrase like "efforts to reinstate biodiversity" as opposed to "bring the wilderness back." Look at any kind of marketing campaign to see evidence of this, for example in name brands versus generic items. Which sounds more attractive to you, "Rice Krispies" or "Crisped Rice Cereal Product"? This is not necessarily jargon, because there are no expert fields in cereal, but it illustrates the point of technicality against familiarity. We can learn about evoking emotional responses that lead to buy in from those who make a living selling products to the average person.

Parallel to jargon, we also see patterns of "non-terminology" arise, similar to George Orwell's "Newspeak"[33]. This naming convention devalues the subject at hand with the language used and pushes an invisible agenda meant to distance humans from nature. Jickling uses the example of hunted animals being labeled "game" by renewable resource agencies, and all other animals simply being called "non-game"[34]. In doing so, these animals are identified as valuable in regards to their worth to humans. This is not reflective at all of the true, intrinsic value of animals and biodiversity. We can extend this practice to other buzzwords, like climate change for instance. At this point, climate change is a recognizable enough phrase that it would be difficult to change its widespread use in practice. But what if we coined it first as "homebase threat" or "landscape disruption?" Would we see more concern if instead of "climate" being changed, it was your own home being threatened? We must reinvent language to properly express the kinds of intrinsic value we sense in the larger living world[35]. Our vocabulary can inspire listeners to think with their hearts and souls as opposed to their coins and bills. The abstract threat of climate change is much more immediate and profound than current language can possibly convey with jargon and non-terminology dominating the field. Climate crisis will rock humanity to its core and we must prepare for it by banishing the belief that science will save us.

4. The Empowering Narrative: How Storytelling More Potently Affects the Individual

One of the greatest tools of human connection is storytelling. From the moment you are born to the moment you leave this earth, we are constantly listening to each other and sharing experiences to foster personal relationships. The stories one tells can also mark important differences between people that need accommodating, as we discussed earlier in applying cultural cognition to communication. The

[33] Jickling, "Environmental Thought, the Language of Sustainability, and Digital Watches," 175.
[34] Jickling, "Environmental Thought, the Language of Sustainability, and Digital Watches," 175.
[35] Jickling, "Environmental Thought, the Language of Sustainability, and Digital Watches," 178.

power of the narrative is something to be explored in communicating about sustainability and climate change. Few problems are shared by all who inhabit this earth, and though climate change disproportionately affects marginalized populations and those of lower socioeconomic status, it is unique in its omnipresence. Climate crisis knows no human bounds. For this reason, we must enter into the realm of the personal by using channels of communication that create a sense of individual responsibility to each who hears it. The strategic use of narratives gives meaning to abstract scientific information and are key to understanding what it means to live in and cope with a changing climate[36].

We must define 'narrative' and come to an understanding as to how it can actually be employed. A narrative is a story that connects and explains a carefully selected set of supposedly true events, experiences, or the like, intended to support a particular viewpoint or thesis[37]. It is not necessarily identical to a framework, which describes the underlying structure to any concept and is used more ambiguously in describing writing. Narrative structure has three key features: plot (especially the sequencing of events and integration of different elements), characterization (especially the richness and particularity of characters), and narration (especially focalization–i.e., from whose point of view the story is being narrated)[38]. We employ narratives constantly to make sense of the world we live in, and we have been doing so for thousands of years. In John D. Nile's book, "The Poetics and Anthropology of Oral Literature," he recounts hundreds of years of storytelling history beginning (by his own choice) with the *Beowulf* poet, although he points out there is scholarly discussion of narrative beginnings in the Upper Paleolithic Period[39] with the advent of "myth" and an early semblance of language formed to compile these lesson-bearing stories. He echoes other medieval language scholars by coining our species as "*Homo narrans,* that hominid who not only has succeeded in negotiating the world of nature, finding enough food and shelter to survive, but also has learned to inhabit mental words that pertain to times that are not present and places that are the stuff of dreams"[40]. A particular feature of climate communication that has proved itself a limitation is its inability to perform this latter function. People do not feel the press of climate disaster because, like any other impending threat, they cannot envisage such an awful thing happening to them. Narratives, as Niles tells us, function specifically to create these worlds of unimaginable scale and allow the reader to conceptualize what consequences of climate change could look like, and more poignantly what they would *feel* like. In the most catastrophized version of events, climate crisis narratives are more kindred to the stuff of nightmares rather than the "stuff of dreams", but

[36] Krauß and Bremer, "The Role of Place-Based Narratives of Change in Climate Risk Governance," 2.
[37] "Definition of Narrative | Dictionary.Com."
[38] Lejano, Tavares-Reager, and Berkes, "Climate and Narrative," 65.
[39] Niles, *The Poetics and Anthropology of Oral Literature*, 4.
[40] Niles, *The Poetics and Anthropology of Oral Literature*, 3.

not fostering fear and instead fostering a deeply personal understanding that our actions have environmental consequences could make all the difference.

If one were to create a spectrum of register in writing, the narrative would lie on the opposite side of scientific reports. Complex statistics, scientific jargon, and the navigation of probability vs. certainty language make these reports inaccessible to the general public. This disconnect between scientists and their audience widens into a nearly insurmountable gap when considering the levels of education, and consequently the levels of privilege, that someone must obtain before qualifying to understand the intricacies of upper level science. By focusing climate conversation on technical definitions of risk and quantifiable losses, this "privileges scientific and professional knowledge systems and excludes other citizens from the discussion, reducing them to subjects to educate"[41]. Narratives perform the opposite function, and instead are built to involve readers. We are cognitively inclined to fill gaps in the abundance of uncertainty that surrounds us–we yearn to complete the story, and when knowledge only exists in technical form, issues may not compel us to personal commitment and action[42]. Narratives are adept at conveying information that could not ever be scientific in nature, such as the joy of growing your own produce, or the despair a community experiences after a hurricane. These emotions are not quantifiable, but a narrative can successfully conjure up these feelings–making them an important tool in scientific and non-scientific realms. By allowing the reader to become an active participant in the story of climate change through the use of the narrative, a sense of responsibility arises that has the potential to change an individual's perception of the role they are playing in the grander framework of actors and victims.

Meditate on confrontations you have experienced in your own life. What drove you to action? In all likelihood, your personal sphere was infringed upon and there was threat of disruption to your life and the structure you live to uphold. Unprovoked, human actors will allow a number of events that conflict with their own code of ethics to slip by without question. Of course, not all fights are worth fighting, and society does not expect every average Joe to sprint into battle when their Amazon order arrives in non-recyclable packaging, and the carbon footprint of its delivery is not offset by the planting of an acre of pine saplings. But, what *does* society expect the average Joe to take up arms and defend? The grander question of responsibility arises here, and what society holds each individual accountable for. To return us to our original aim, however, let's examine how the narrative pathway can critically foster a sense of responsibility towards the earth.

A Montana State University study put this idea to the test when they posited that risk communication may be more effective when embedding scientific information in narratives. In an effort

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[41] Krauß and Bremer, "The Role of Place-Based Narratives of Change in Climate Risk Governance," 2.
[42] Lejano, Tavares-Reager, and Berkes, "Climate and Narrative," 62.

to provide guidance to scientists, they examined how subjects responded to risk information conveyed using three distinct narrative perspectives: "Hero," "Victim," and "Victim to Hero" [43]. The hero narrative contained phrases like "you can begin to implement individual and community strategies before a disaster occurs" and "by doing so, you will have really helped in a big way". The victim narrative used phrases that imposed more fear of inaction, like "you and your neighbor could be harmed if…" and "without preparation your town could be lost". And finally, the victim to hero narrative showed a character arc with a cause-and-effect relationship using phrases like "without preparation, your town could be lost as it faces difficult times. Working with your local responders, you can think about and begin to implement strategies before a disaster occurs"[44]. In their findings, they report finding the most success and positive reactions from participants upon hearing the "victim to hero" phrasing. "Hero" phrasing was the second most positive, and "victim" phrasing was received negatively.

Firstly this shows us the potency of language, as subtle changes in diction and syntax among these three short phrases resulted in dramatically different receptions. Secondly, it illustrates the significance of assigning roles and agency in climate risk messages. "Victim" messaging robs the subject of agency–regardless of whether it's hypothetical in nature, people reading these messages envision themselves falling victim to the worst fates of climate disaster without power to prevent it. "Hero" messaging does the opposite to a fault, and depending on the person, awards the subject too much responsibility that they freeze at the thought of the pressure that accompanies leadership. "Victim to hero" phrasing, however, contains more narratively complex features, namely a character arc and a dynamic plot, and as a result we see more success in the message's salience. An individual reading the victim to hero message does as they would do reading either the "victim" or "hero" message, and maps themselves into the story being described. Visualizing themselves performing the same transformation the ambiguous subject of the sentence undergoes is a more digestible and encouraging method of spurring action, and as we see through this example it can be done in just a few words. Humans do not want to be robbed of agency, nor do they want responsibility to be thrust upon them, so choosing to take the scientifically supported action and become a hero in your community wins out as the most attractive option. The conductors of this study summarized their findings as proof that personal narratives are more effective at persuasion than conventional science messages, and that persuasive narrative messages emotionally engage respondents and empower them to choose to prepare themselves for disaster. They describe

[43] Shanahan et al., "Characters Matter," 1.
[44] Shanahan et al., "Characters Matter," 9.

further possibilities of research in this field, and suggest it could ultimately serve as a "lingua franca, or bridge language for emergency managers and scientists to improve risk communication"[45].

With that serving as a smaller case study for specific linguistic tools, let's zoom out a bit to complete our discussion regarding narratives. Looking to historical examples of successful narrative use, one cannot ignore that indigenous peoples have built extensive spiritualities and cultural appreciation of the environment out of the tradition of storytelling. They are markedly better at living in harmony, or more sustainably, with their landscapes as a result of this profound regard for conservation. Although there are many factors to point to as the reason for this long standing symbiotic relationship between people and place, the use of the narrative in ecological idealization and value-grounding is certainly worth examining. Indigenous epistemologies put emphasis on the intergenerational diffusion of cultural knowledge, and we also see particular focus paid to the natural environment–a common feature of indigenous stories is that communication with nature is a fact of life[46]. Contemporary society has relaxed its expectations for permanent settlement, and the "American Dream" has evolved as new generations enter adulthood with more student debt than ever, and greater need for transience amongst other reasons. Recent years have seen the amount of, and the comfort people find in, rental homes or short-lease apartments skyrocket. This pseudo-nomadic lifestyle has gained popularity amongst all generations, but as a result we have lost the important sense of pride in place, and connection to where one has settled that is foundational to indigenous people's epistemologies. Not that permanent ownership of land is necessary to feel responsible for the health of your environment, but we can agree that mobility in one's dwelling fractures a sense of "homebase" in nature, and by extension weakens one's will to protect it. In fact "ownership" being the operative word here pits contemporary language against that of indigenous people who believe their land is not a possession, but rather a mutually beneficial relationship. Ultimately, "by integrating knowledge with feelings, indigenous stories offer a platform to establish emotional connections with the landscape, helping to cultivate a sense of place"[47].

If I were to boil narrative structure in climate communication down to one key feature, it would be the keen ability of storytelling to encourage interactive thought that prompts individuals to reflect on their own values and begin absorbing new perspectives with which to view the environment. The more relaxed storytelling groups born out of indigenous tradition allows for creative and spontaneous responses from participants, and they are more willing to bring up vulnerable topics that otherwise go undiscussed

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[45] Shanahan et al., "Characters Matter," 19.
[46] Fernández-Llamazares and Cabeza, "Rediscovering the Potential of Indigenous Storytelling for Conservation Practice," 3.
[47] Fernández-Llamazares and Cabeza, "Rediscovering the Potential of Indigenous Storytelling for Conservation Practice," 3.

in traditional knowledge pathways. On a grander scale, this shift in tone will empower marginalized groups to tell their own stories in an otherwise one-way conversation. We use stories to order our own thoughts, so we may extend this logic to other people and elicit their thoughts on climate risk governance through the stories they tell[48]. Narratives help to situate events in a time and place. They make space for the abstraction of science as well as the complexities of human and social reasoning to exist in a synergy that's more effective than the current unidirectional dissemination of scientific support for climate change.

Conclusion:

The language used in contemporary dissemination of climate crisis communications must be remedied if climate activists and scholars are to inspire individual behavioral change on the large scale that is needed. With the improvements I have suggested in all three areas of focus, I am ultimately proposing an overhaul of the standing structure of scientists, scholars, and the media to become more inclusive and personalized. There is abundant opportunity for further research in these areas, and I would be interested to see these tactics put into practice and tested for effectiveness. As my paper states, cultural cognition in particular is entirely dependent on the target population's demographic makeup, so a survey of climate communications would require a diverse array of cultural and religious groups, which may be difficult to control. Using cultural cognition as an access point, we can cater information campaigns to be most effective by using familiar language that invokes spiritual and cultural values, and dispels polarizing confrontation. In accordance with my own belief that nature holds intrinsic value, the avoidance of jargon and "non-terminology" will allow us to re-humanize our vocabulary dedicated to climate change, and in turn foster human responses to the atrocities our species has forced our planet to endure. Simpler language in all scientific reports entering the public sphere will help dismantle the lopsided power dynamic that exists between scientists and laypersons, as well as misuse and misrepresentation of data that allows skeptics to entangle their incorrect beliefs with "fact." And finally, the indispensable tool of narrative storytelling can be employed to integrate all of these solutions into one cohesive story. Using a narrative framework in sustainability messaging will liken us to indigenous bodies of thought by contextualizing the abstract threat of climate disaster within our own landscapes and communities. Communication is an indispensable tool of climate crisis mitigation. Incorporating the tactics outlined and making every word count could be just the catalyst we need to inspire collective action, and save our planet.

[48] Krauß and Bremer, "The Role of Place-Based Narratives of Change in Climate Risk Governance," 4.

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