



Strategic Foresight and Innovation

But I like making garbage: An analysis of individual action and inaction towards climate change

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“but I *like* making garbage”

An analysis of individual action and inaction towards climate change

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INTRODUCTION

Purpose and Process

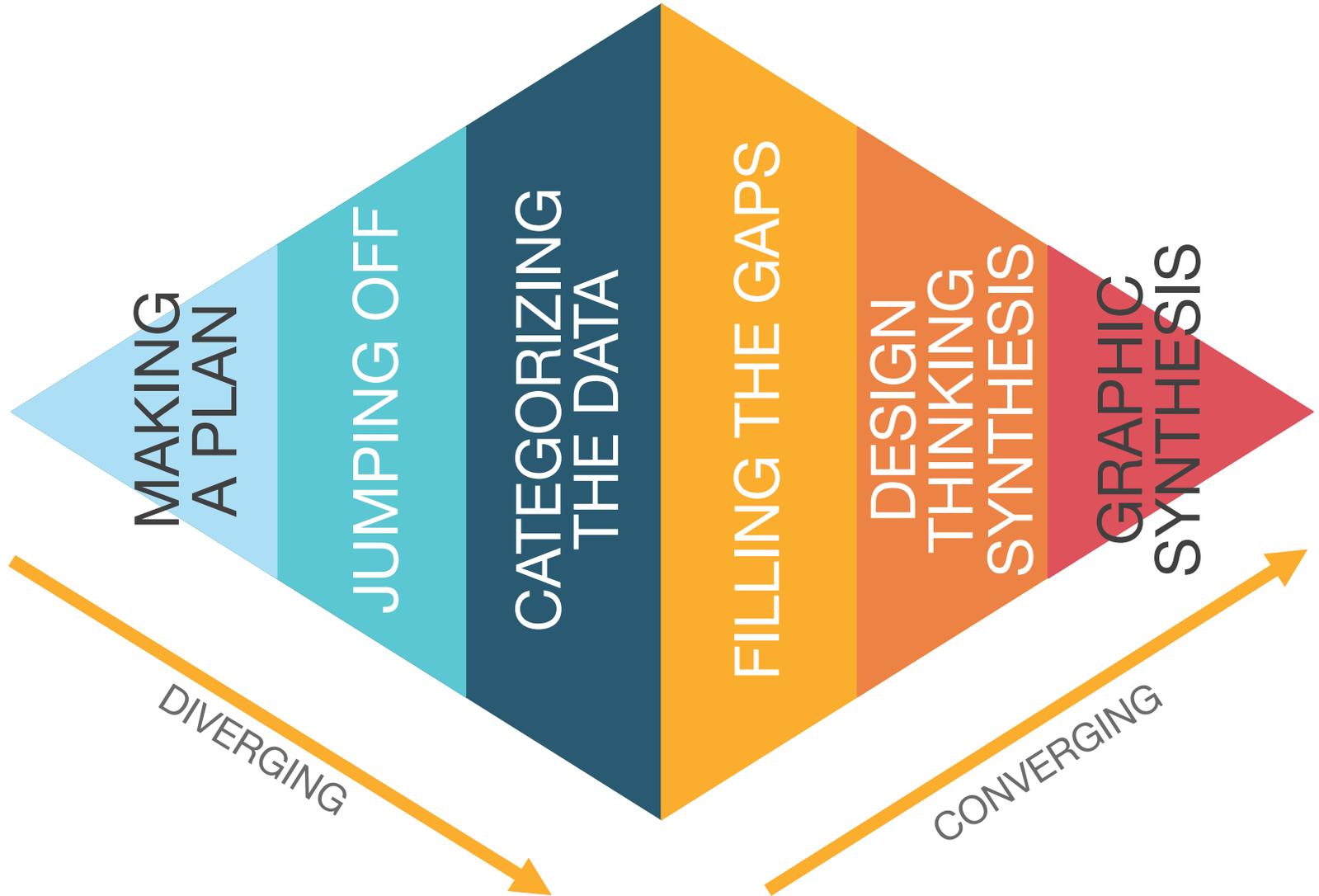
Purpose

The purpose of conducting this literature review was to establish a theoretical framework for individual action and inaction regarding climate change. This process also uncovered the various areas that fall within this broad topic and has further assisted in identifying areas of further study for the upcoming major research project.

Within this report, I have evaluated, summarized, and clarified the related literature on individual climate change action and inaction. This includes:

- Pertinent key terms, definitions and terminology
- Critiques of published studies, models, case studies on the topic
- Illustrations on how the subject has been studied previously through different lenses (social, economic, psychological, ect).
- Significant data findings and themes
- Major problems with climate change and individual action (a basis for further research)

The following processes was followed to achieve the results contained within this report.



Process

1)

Making a Plan

The initial plan was to cover four main topic areas that have commonly been linked to influencing climate change: psychological, sociological, scientific, and political. This broad approach included an initial literature reading that covered a 360 view of climate change, which would offer tangible insight to the deeper lying issues. Research was done to identify the proper literature pieces that would act as a diving board for the rest of the review.

2)

Jumping Off:

The two novels that were initially read were *Don't Even Think About It* by George Marshall which focused on psychological and social influences, and *This Changes Everything* by Naomi Klein which focused on political, corporate, and economic influences [See Exhibit One].

Process

3) *Categorizing the Data*

Once the pertinent data was compiled from the two novels, several knowledge patterns emerged. These patterns/groupings were merged into synthesis statements, which congregated around certain themes from the data.

4) *Filling in the Gaps*

Using the synthesis statements as a basis, further research was conducted to ensure that a proper critical analysis was done of all the major themes collected. Additional literature such as books, government documents, statistics, scholarly articles, and opinion pieces were searched which 1) helped identify gaps within the literature and/or 2) supported the previously existing statements. This process occurred for several rounds as each additional piece of content would elicit further inquiry and demanded additional research.

**See next page for a comparison of the initial synthesis statements and the post-investigatory synthesis statements*

Process

INITIAL SYNTHESIS STATEMENTS

- 1 Importance Of Stories
- 2 Need For Normality And Safety Leads To Willful Ignorance From People
- 3 The Discomfort From Climate Change Elicits Strong Psychological Responses
- 4 Fears Impact Social Lenses
- 5 Convenience Is Our First Priority
- 6 The Emotional And Logical Functions Of Our Brain Inhibits Our Foresight Abilities
- 7 People Are Heavily Influenced By The Social Groups Around Them
- 8 Scientists Have The Greatest Amount Of Power Yet Have Weak Narratives Which Leads To Weak Influence
- 9 Climate Change Has Been Identified As An “Environmental” Issue (Frame)
- 10 Climate Change And Pollutants Have Been Misframed
- 11 Governments Are Not Strong Advocates For Climate Change



POST-INVESTIGATORY SYNTHESIS STATEMENTS

- 1 Importance Of Stories
- 2 The Discomfort From Climate Change Elicits Strong Psychological Responses
- 3 Convenience Is Our First Priority
- 4 Developing Empathy For The Planet And Focusing On Vulnerability Aligns With Positive Climate Change Movements
- 5 We As A Species Have Poor Internal Foresight Abilities
- 6 People Are Heavily Influenced By The Social Groups Around Them
- 7 Framing: Social and Governmental
- 8 Scientists Have The Greatest Amount Of Power Yet Have Weak Narratives Which Leads To Weak Influence
- 9 The Big Players Are Causing The Most Amount Of Damage To The Small Players
- 10 Framing: Social and Governmental
- 11 Governments Are Not Strong Advocates For Climate Change

Process

5) *Data Synthesis*

Once the data had been collected and the synthesis statements had been finalized, the data was re-organized and further synthesis to identify key themes, repetitive and consistent concepts, and overarching categorizations [See Exhibit Two]. This high level view of the data put the various components into perspective as they were more comparable to the other concepts. Additional similarities and categorizations were made at this level such as the overarching drivers of what causes people to act/not act; Values and Beliefs, Psychology, Discomfort.

6) *Graphic Synthesis*

Once the tangible data was collected, it was then formatted in an infographic [See Exhibit Three]. By applying visual language to the data, it helped reframe information in a way that further identified connections between the different components.

Note: A final amount of data can never truly exist, as there is a multitude of knowledge and literature available in the world. For the purposes of this literature review it was capped after enough critical analysis was conducted for each topic area.

Lessons Learned

Throughout the literature review process, check-ins were done with Helen Kerr, the academic advisor. Her guidance and insight assisted in recognizing the two following learning opportunities/lessons about academic research approaches:

- One of the biggest challenges was being cognisant of and eliminating the bias from various literature pieces. The two initial novels that were read (and which provided a majority of the direction for this review) were based in fact, however they both had an underlying bias towards more liberal, socialist view points. This bias assisted in conveying certain points, however it was important to research the information that may have purposefully not been included (aka the gaps).
- Another issue that I needed to be mindful of was the style of research that I was adopting while conducting the literature review. My previous career and academic experiences were centred around persuasive writing of a specific view as opposed to taking an objective and critical stance of a subject.



INTRODUCTION

Realities Surrounding Climate Change



Reality Check

Ecosystems have been transformed by human actions more rapidly and more extensively in the last 50 years than in any other comparable time in human history with little indication of reparative growth (Reid, Mooney, Cropper, Capistrano, 2005). Changes have been made in the structure and function of ecosystems and in biochemical cycles, and there are significant and largely irreversible changes to species diversity. The Fourth Assessment Report from the Intergovernmental Panel on Climate Change in 2007 confirmed climate change as unequivocal. This conclusion was reached by observations of global air and ocean temperature, widespread melting of ice and snow and rising of global average sea levels (Parry, Canziani, Palutikof, 2007).



Wicked Problem

Climate change is exceptionally multivalent, enabling a limitless range of self-serving interpretation, and it is uncanny, creating a discomfort and unease that we seek to resolve by framing it in ways that give it a familiar shape and form. These two factors combined make it a **wicked problem**. Additionally, of all the possible combinations of loss and gain, climate change contains the most challenging: requiring certain short-term loss in order to mitigate uncertain longer-term loss (Marshall, 2014).



Climate Observations

1)

Our planet is experiencing the significant impacts of climate change, which include changing weather patterns, rising sea levels, and more extreme weather events. Every year, greenhouse gas emissions are at their highest levels in history. (Reid et al., 2005).



Climate Observations

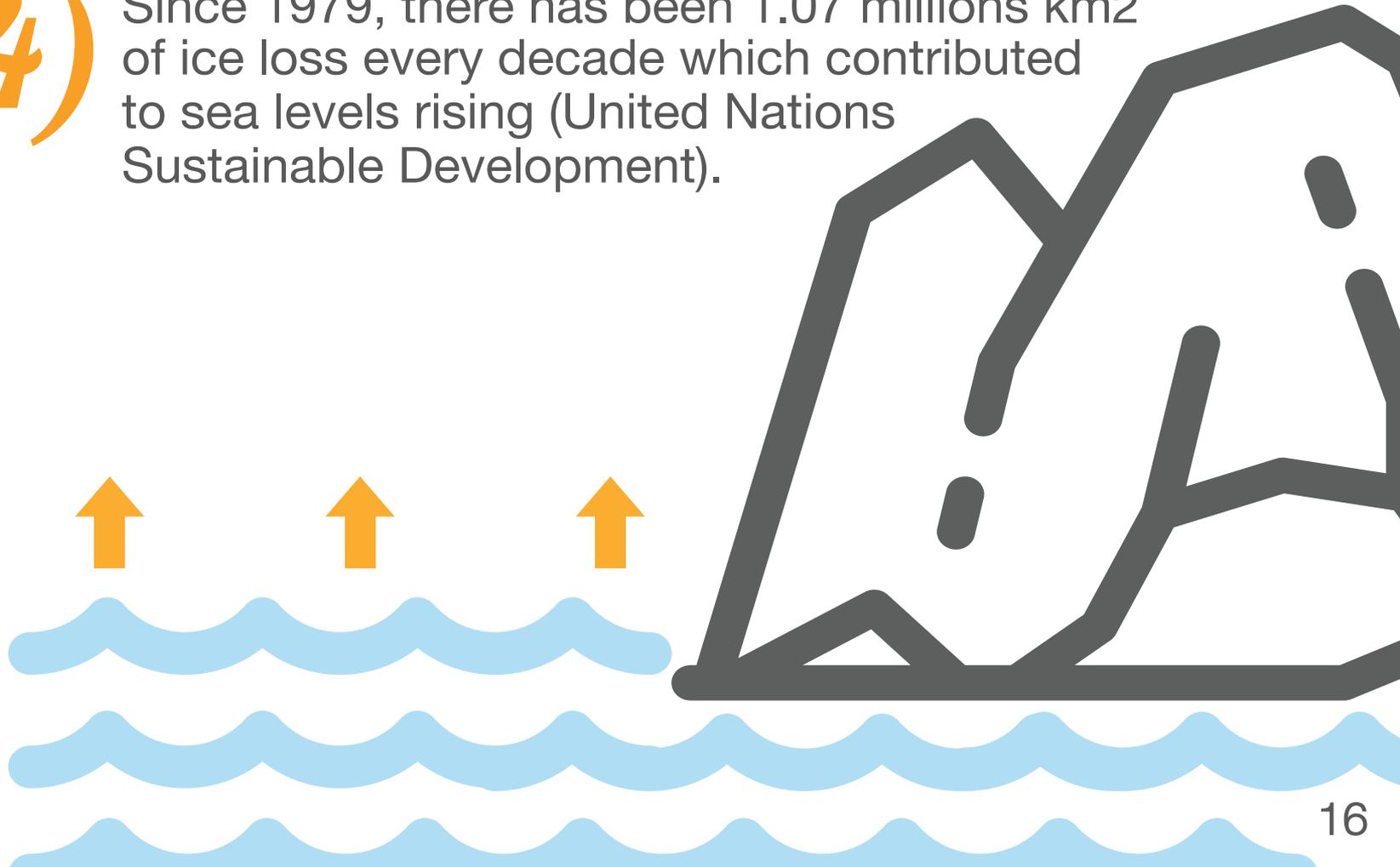
2) From 1880 to 2015, the average global temperature increased by 0.87°C (National Aeronautics and Space Administration [NASA], 2015).



3) For each 1°C of temperature increase, grain yields decline about 5%. Maize, wheat, and other major crops have experienced significant yield reductions due to a warmer climate in the past 21 years (United Nations Sustainable Development).

Climate Observations

- 4) Since 1979, there has been 1.07 millions km² of ice loss every decade which contributed to sea levels rising (United Nations Sustainable Development).



Political Landscape

With regards to political movements to support climate change mitigation efforts, there have been great strides that have come from strong advocates. That being said, there have also been barriers that have prevented effective and continuous implementation of environmental protection policies which typically stems from right wing political influences and corporate agendas (Klein, 2015).

Additionally, there are other social/political/international issues that take priority over the future-impacting climate change. For example, every year since 2001 in the United States, the Pew Research Centre has asked people to choose the policy issue that should be a high priority for the president. "Dealing with Climate Change" has always stayed the bottom 16% of the priority list (Smith, 2016).

Alternatively, you can also see progressive work being done at high levels. The Climate Change Performance Index 2016 (CCPI) measures emission levels per capita as well as a country's use of renewable energy and its climate change policies. Denmark, the United Kingdom, and Sweden are the top ranking out of 58 countries due to their climate strategies (Burck, Marten, Bals, 2015). You can also see smaller scale governmental work occurring such as the Ontario Climate Action Plan which is encouraging systemic changes as well as personal mitigation approaches (Government of Ontario, 2016).

Political Landscape

As predicted by the hyperbolic discounting model, governments have also proven to be extremely unwilling to incur costs in the short term but perfectly willing to accept far greater costs in the future (Marshall, 2014).

There are also anti-climate change lobbyist groups such as the Heartland Institute which oppose the scientific consensus on climate change. Groups such as these do not dispute that climate change itself is occurring, rather they advocate that human activities are not driving climate change, and the amount of climate change that is occurring is beneficial (Pilkey, Pilkey, Fraser 2011). These groups have an influence amongst other climate skeptics and continuously try to influence governments/policy makers.

Social Landscape

Social constructs are one of the most important factors in climate change as the human species have evolved an advanced social life. It is this that determines the social cues, norms, enemies, and in-group, out-group dynamics which are important to shaping social responses to climate change.

This report focuses on a variety of social influences and the major issues that have been identified through the reviewed literature are as follows:

- As Thomas Schelling, a Nobel Laureate Economist, stated that without a penalty of a reward system, there is no motivation to commit to anonymous acts of altruism (Marshall, 2014). This eludes to an action system that is intrinsically driven.
- People's tendency to avoid costs and act only in their self-interest (often considered a major obstacle to action on climate change) can be overruled by a sufficiently strong appeal to a group identity and a visible social norm (Marshall, 2014). For example, the appeal of protecting future generations from climate change related harm could be enough to dissuade some from selfish actions.

Social Landscape

Major social issues that have been identified through the reviewed literature continued...

- Climate change has been identified and labelled as an "environmental" issue by the media, through it's advocates, and by politicians. This has fragmented it's impact on wider systems as the label has given people the opportunity to keep it at a distance because it does not outline the direct relationship we as a society and as contributors to this issue have to it; it essentially is a misframing issue (Lakoff, 2010).

Individual Landscape

The human species is genetically predisposed to ignore gradual environmental deterioration (Ornstein, Ehrlich, 1989). Some of the realities surrounding climate change are expected to occur or reach their climax beyond the average length of a human life. Essentially, humans are incapable of looking to the future and recognizing climate change as a threat - which leads a majority of people to not be pre-emptive with their actions or act at all.

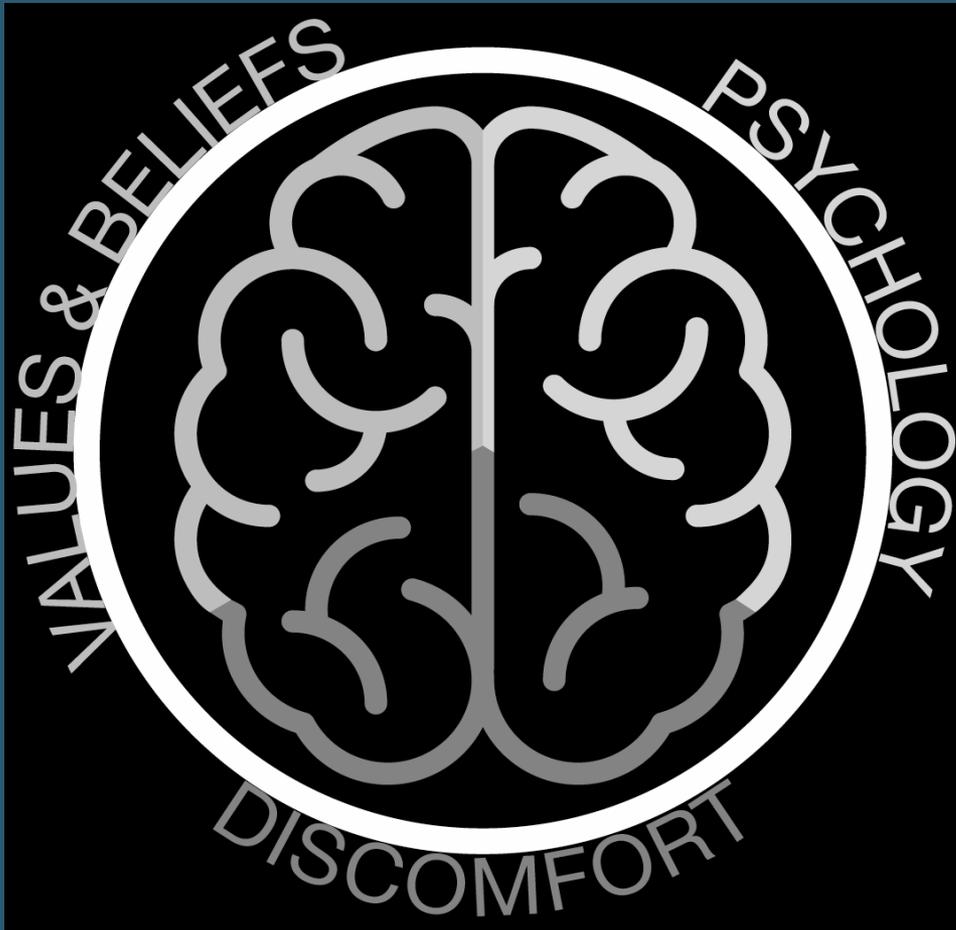
Additionally, when analyzing the current lifestyles and 'needed' resource use for developed countries, it is evident to recognize that the modern global society has constructed and fully integrated a pattern of behaviour and mental paradigms that rely on the consumption of fossil fuels (Hulme, 2009).



DRIVERS

Why People Do or Don't Act

Through data synthesis of the included literature for this review, three overarching themes emerged from the data about individual action/inaction. The three overarching drivers are Values and Beliefs, Psychology, and Discomfort.



Values & Beliefs

Audiences have existing values and beliefs which are defined through previous life experiences. These have the ability to influence their attitude towards situations.

Psychology

In this context, psychology involves the reasoning and processing of an individual when exposed to various experiences or types of information.

Discomfort

Since modern recorded history, people have not encountered climate change to such extreme degrees than they have during these past few decades. This has caused a high level of unfamiliarity, reluctance to accept, and discomfort.

Values & Beliefs

SACRED VALUES



CONVENIENCE



ENVIRONMENTAL INTERACTION



ADDITIONAL





SACRED VALUES

Framing Religious and Spiritual Connections:

Before reading this section, it is important to note that sacred values are not just about religion. Brain scans have found that the parts of the brain associated with sacred values are those associated with other moral choices (Marshall, 2014).

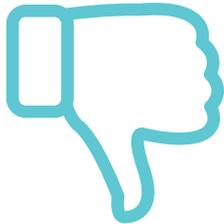


Why People Act

Despite traditional approaches to resource use from Catholics, there is a larger shift occurring that encourages environmental protection. In September of 2015, Pope Francis made a moving plea for nations to act now on climate change while addressing the realities that face our planet. The pope, being an opinion leader for many devout Catholics around the world, influenced views so much that 17 percent of Americans and 35 percent of Catholics in the USA say his position on global warming influenced their own views of the issue (Maibach, Leiserowitz, Myers, 2015). The Yale Program on Climate Change Communication also learned that due to Pope Francis' message, Americans are more likely to think global warming is a moral issue (+6 points), a social fairness issue (+8 points), and most importantly, a religious issue (+4 points) (Maibach et al., 2015).



SACRED VALUES



Why People Don't Act

An individual often associates his or her own connections with the environment as a spiritual and religious connection with a higher power or God (Lakoff, 2010). This fuels the idea that man is above nature in a moral hierarchy and that nature is there purely for human use and exploitation (Clayton, Opatow, 2003). This mindset would then cause Catholics to not see a problem with their current consumption and continuously exploit the resources that are 'offered' to them by the planet.



CONVENIENCE



Why People Act

A new Nature Climate Change study finds that the best way to motivate people to support action to limit climate change is to explain to them the dangers of not taking action. This differs from simple reframing as it describes the importance of including a repetitive core message of basic climate science and the catastrophic risks created by inaction. This study looks in particular at what happens if you stop talking about the “benefits of reducing climate change risks (the conventional justification)” and focus instead on other benefits, such as “Technological innovation, green jobs, community building and health benefits (Bernauer, Mcgrath, 2016).” It is through this approach that a reframing of present convenience to future convenience takes place.



CONVENIENCE



Why People Don't Act

The argument for convenience-led action stems from the evolution of the human species. Throughout our history, society has favoured over-consumption as a means to achieve convenience and success (Lazarus, 2009). Similarly, popular behaviourist and social philosopher B.F. Skinner once stated that humans are innately compelled through evolutionary processes to act in egoistically oriented ways and with short-term gains in mind (Skinner, 1978). Adding onto that statement, economist Garret Hardin contends that natural selection has favoured short-term thinking and egoism as a successful survival mechanism and as a result is pervasive in society today (Hardin, 1968).



ENVIRONMENTAL INTERACTION



Why People Act

Interactional Theory suggests that an interactive exchange between an individual and the characteristics of the social and ecological environment influence the outcomes an individual derives from an experience (Altman, Rogoff, 1987). Our developing society impedes our connection to nature which hinders the ability for individuals to form powerful affective and cognitive bonds with special settings (Hammitt, Backlund, Bixler 2006).

Similarly, it is important to note the relationship that interacting with the environment has with our availability heuristics as individuals are heavily influenced by their previous experiences (Kates, 1986). Place attachment or place bonding suggests that individuals form powerful affective and cognitive bonds with special resource settings (Altman, Low, 1992). This provides the individual with a greater sense of belonging which enables greater motivation for action.



ENVIRONMENTAL INTERACTION



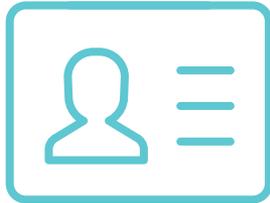
Why People Don't Act

The principles of Interactional Theory can also help explain why people may not act to mitigate climate change; they have little experience with a variety of environments. This causes them to have limited understanding of the impacts their actions may have on the planet and its ecological/biological systems.

There are many examples that interactional theory applies to which outlines the influence it has. For example, those who were alive during the extreme pollution events at the Cuyahoga River (State of Ohio in the USA) may be more likely to think of polluted water catching fire as a real possibility (i.e. they can easily imagine this). However those of younger generations may see polluted water catching fire as a farfetched possibility with a limited probability of occurring (Adler 2003).



ADDITIONAL

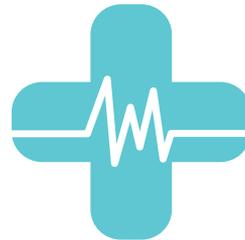


Moral License

DON'T ACT

Past good deeds can liberate individuals to engage in behaviours that are unethical or problematic.

Traditionally, these people would avoid these actions for fear of feeling or appearing immoral (Merritt, Efron, Monin, 2010). An example would be an individual who doesn't recycle because they believe they are helping the environment already by driving a hybrid car.



Altruism

ACT

People have an innate desire and ability for humans to care for each other (e.g. parents caring for young) (Pope, 2007).

It has been indicated that this altruism is not only present cross-culturally, but it also has been present throughout history. Examples include our propensity to divide labour to survive, care for young children, and in the development of language (Jennings, 2006).



Empathy

ACT

Empathy has a physical basis in the mirror neuron system (Lakoff, 2008), which links us physiologically to other beings (e.g., the polar bears) and to things (e.g., redwoods) in the natural world. This leads us to see inherent value in the natural world.

Psychology

The two main categories that derived from the psychological processes are *Choice Reasoning* and *Information Processing*.

Choice Reasoning

An individual's decision making is influenced by core psychological occurrences that impact their priorities, are affiliated with their sense of convenience, and feed from their comfortability with risk.

Information Processing

When an individual is exposed to new information, there are various data-processing systems that occur. Furthermore, there are interrelated and dynamic influences that include sensation, perception, learning, thinking and memory – all which work in tandem to create the mindsets (aka frames) people have about climate change.

What is important to note about the following psychological processes is that they can influence an individual to both act or not act. They are included in this report as they are vital to the digestion of information and the consequent actions in relation to climate change.

Choice Reasoning



LOSS AVERSION

Loss aversion suggests that people become attached to their current level of prosperity and feel entitled to maintain that status (Feygina, Jost, 2009). This relates to climate change as people treat a potential loss from the status quo as more significant than a potential gain from the status quo (Rachlinski, 2000).



RISK AND CHOICE

People making riskier choices in the face of losses compared to in the face of gains. In other words, people don't want to lose now for benefits they may receive later (Marshall, 2014).



PARALYSIS AND FEAR

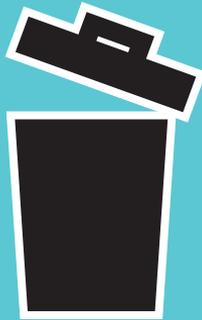
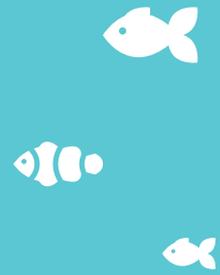
There are many social feedbacks operating in human's attitudes to climate change – such as the bystander effect or false consensus effect – which exaggerate small differences and widen the divides between people. These social divides can cause a person to be ignorant or even become “paralyzed” with fear about the subject (Marshall, 2014). Similarly, it is argued that individuals have a finite pool of worry. Filling the pool too much can cause emotional numbing which acts as a protective indifference to issues that are not of immediate personal concern. This then narrows the criteria for space in the pool, or even shrinks its total size (Marshall, 2014).



TEMPORAL DIMENSION

The human species as evolved to think in the very short term and maximize their individual interests (Brownlee, Powell, Hallo, 2013). By thinking mostly in the present, people prefer immediate rewards and discount future gains, which is detrimental to the health of shared environmental resources (Wilson, 1984).

Info Processing



COGNITIVE DISSONANCE

Cognitive dissonance is the ability to ignore evidence (e.g. empirical evidence of climate change) that is contrary to existing held beliefs by an individual (e.g. climate change is a hoax) (Wicklund, Brehm, 1976).



BIASED ASSIMILATION

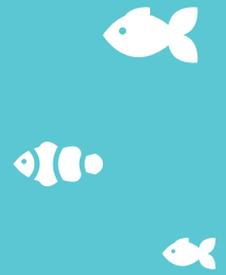
Individuals may attempt to reduce the psychological tension from cognitive dissonance by enacting biased assimilation - a process where a person vehemently defends a held belief against contradictory evidence (Rachlinski, 2000).



CONFIRMATION BIAS

Confirmation bias occurs when people look for information that is consistent with what they already think, want, or feel, leading them to avoid, dismiss, or forget information that will require them to change their minds and, quite possibly, their behaviour (CRED).

Info Processing



PSYCHOLOGICAL STRESS THEORY

Psychological stress theory indicates that denial is a likely response to a threat perceived as uncontrollable which is how many people feel about climate change (Lazarus, 2009).



ILLUSIONS OF OPTIMISM

Beliefs in the efficacy of individual actions may be influenced, or conversely contradicted by illusions of optimism. Specifically, most mainstream functioning people often overestimate their positive qualities, skills, and abilities to control and react to events (Taylor, Brown, 1988).



INNATE OPTIMISM

Innate optimism has allowed humans to assume a moderate degree of risk because some acceptance of risk promotes discovery and invention, and ultimately survival (Gardner, Stern, 2002).

Discomfort



**KNOWLEDGE
DEFICIT
MODEL**



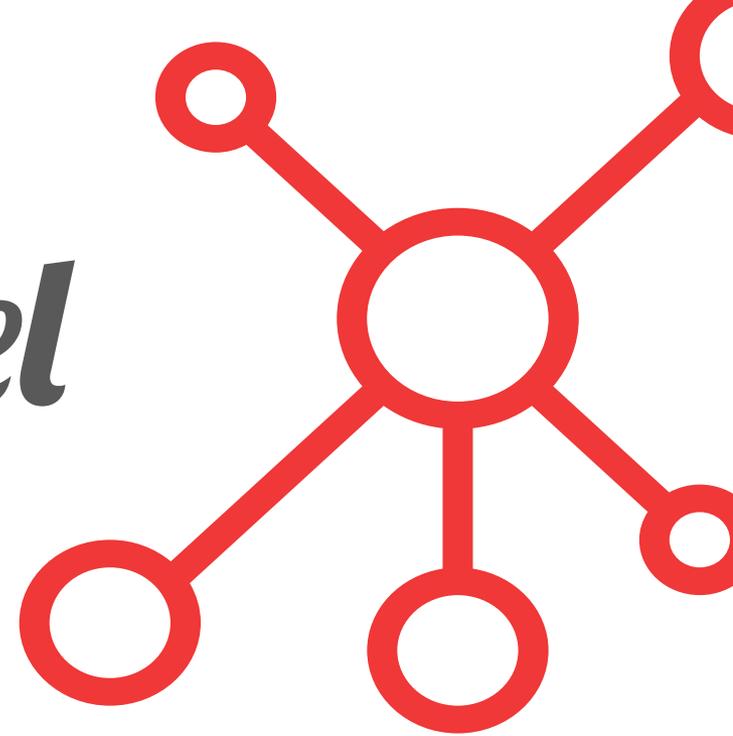
**UNCERTAINTY
AND
FEAR**



CONNECTIONS

Knowledge Deficit Model

The knowledge deficit model involves educating individuals about the process to obtain scientific data (the scientific method), how scientific findings are interpreted, and the benefits that science can bring (Allum, Sturgis, Tabourazi, Brunton, 2008). For many years researchers have used the knowledge deficit model to explain public resistance to science, which is underpinned by fear, ignorance, and superstition - however the technique has proven to be ineffective at times and widely criticized (Brownlee, Powell, Hallo, 2013). This is due to the public's distrust of science which is attributed to factors beyond lack of knowledge about scientific findings and processes (Irwin, Wynne, 1996). It is noted that a general distrust of industry and regulatory agencies as well as religious beliefs and social influences may contribute to the way the public views scientific information (Brownlee, Powell, Hallo, 2013).



Uncertainty and Fear



People use different psychological methods to cope with various climate-related realities. Social feedbacks also amplify and/or solidify the views that an individual takes on climate change. As mentioned before, Climate change is multivalent and has been labeled as a ‘wicked problem’.

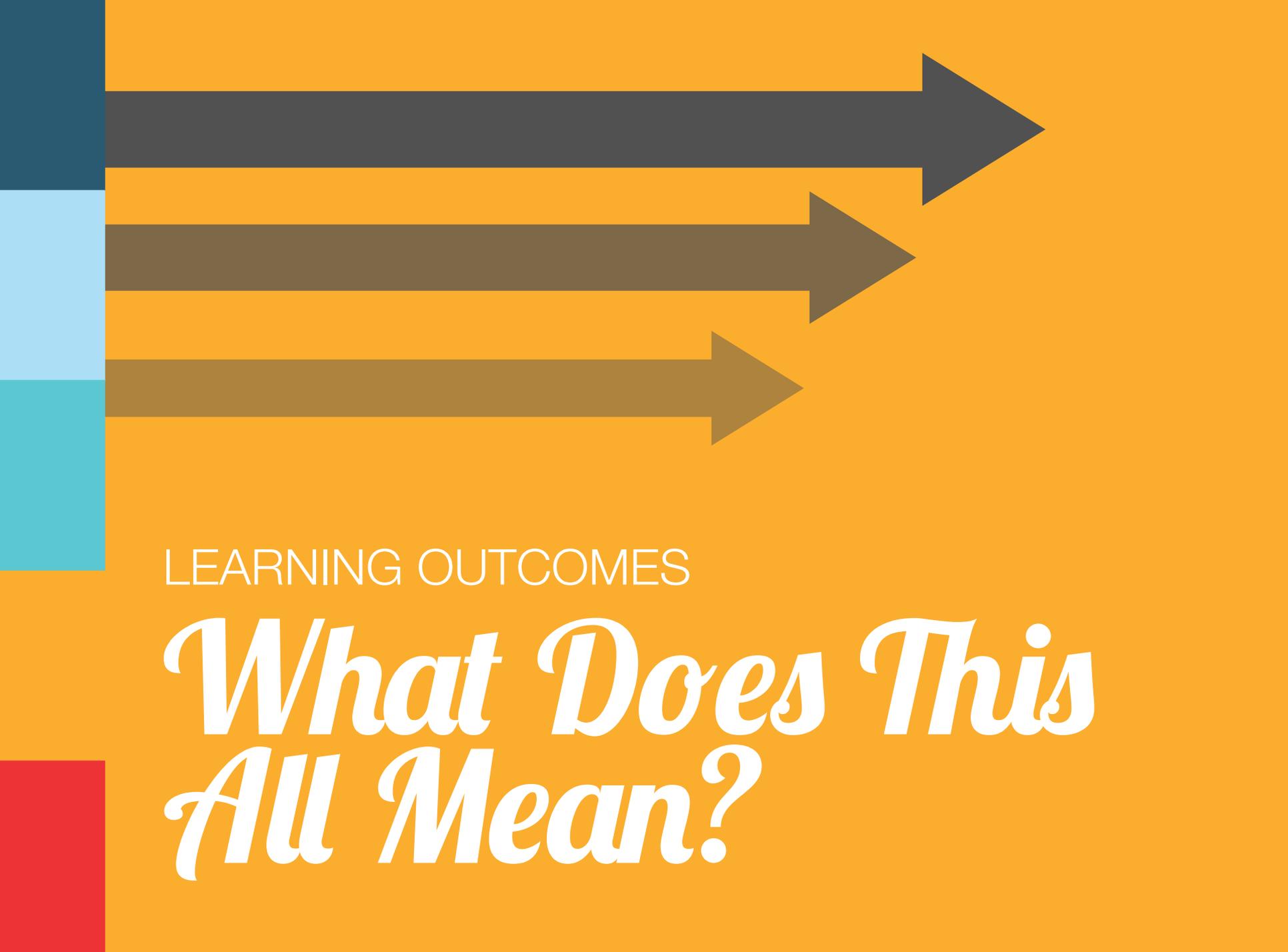
Wicked problems have varying degrees of impacts and salience for different people, especially when it is not in their immediate cognitive frames. Sigmund Freud recognized the destabilizing psychological impact of something that seems to be almost familiar, yet is not. He called this **das Unheimliche**, aka the Uncanny Condition (Freud, 1919). Climate change is inherently uncanny: weather conditions and the high-carbon lifestyles that are changing them, are extremely familiar and yet have now been given a new menace and uncertainty (Marshall, 2014).

Another problem is that when people feel threatened and isolated, they can adopt a range of strategies to diminish their sense of internal fear: denial, uncertainty, playing down the threat, fatalism, and anger toward the communicator. Psychologists call these responses maladaptations, in that they are responses that do nothing to reduce the actual level of risk (Marshall, 2014).

Connections

A hallmark of effective environmental education and interpretation is connecting participants to concepts and resources, by facilitating powerful experiences well beyond providing facts and information (Tilden, 1977). In lieu of these connections, these issues are disconnected from an individual's schema of being.





LEARNING OUTCOMES

*What Does This
All Mean?*

What Does It Mean?

The issue of people not acting to mitigate climate change is not one that can be fixed with the relentless advertisement of drowning polar bears and shrinking ice caps. This issue is complex in nature and is embedded in a majority of major global systems, which is why it needs to be approached in a manner than addresses its diverse and substantial components. Failure to do so will result in further:

I N A C T I O N
H Y P O C O G N I T I O N
A P A T H Y
D I S I N T E R E S T
M I S U N D E R S T A N D I N G

Learnings

This literature review has assisted in identifying the key influences for why an individual acts or doesn't act to mitigate climate change (as well as the varying degrees of commitment they might display).

In summary, people's actions are dependent on their:

- Previous life experiences
- Their current social systems
- Their values and beliefs
- How they digest the knowledge that is presented to them
- How comfortable they are with discomfort and uncertainty

Literature Review

The case studies, pieces of literatures, and studies have addresses numerous questions that researchers have had about climate change, however they have mainly done so while building off of the social and psychological experiments that have been done in the past.

With regards to science thesis' and experiments, 97% of scientists have agreed that climate change is human caused, yet a majority of the reports focus on different components (for example ozone depletion, effects of harmful greenhouse gasses, ect) (NASA). The issue with these reports (and with climate change in general) is that it is difficult to fully understand the full breadth of impact one change will have – especially when the earth's natural cycles cause for a dynamic field of study. Issues such as these cause doubt and further questioning within the climate change conversation, which in turn further the demand for academic and scientific research.

Literature Review

Major research influencers that helped support this topic are as follows:

Yale Program on Climate Communication

International Panel on Climate Change

United Nations (Earth Charter)

U.S. National Academy of Sciences

Millennium Ecosystem Assessment

Center for Research on Environmental Decisions

George Lakoff - an American cognitive linguist (MIT)

Naomi Klein - a Canadian author, social activist, and filmmaker



LOOKING FORWARD

*Where Do We
Go From Here?*

Looking Forward

This review of climate change related literature covered the immediate factors that influence individual action, however there are others that play an important role in the overall equation. These additional areas have proven to be important for further research:

- How important the role of money, status, and affluence influence people's decisions
- How an individual's contribution to climate change is related to mental health
- How government and its policies influence others and what is the extent of engagement that citizens can show representative bodies to prompt wide-spread change
- How the decrease in climate-change related media coverage has affected people's attention and role
- What influences (natural or systemic) occur in developing countries (and other parts of the world) that impact climate change action

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All icons were taken from flaticon.com

Exhibit One

An example of how one of the initial literature pieces was read and processed by the four main categories: yellow = psychological, pink = social, blue = scientific, green = political/economical.



Exhibit Two

This is an example of the synthesis process that was conducted once all of the raw data from the literature was collected.

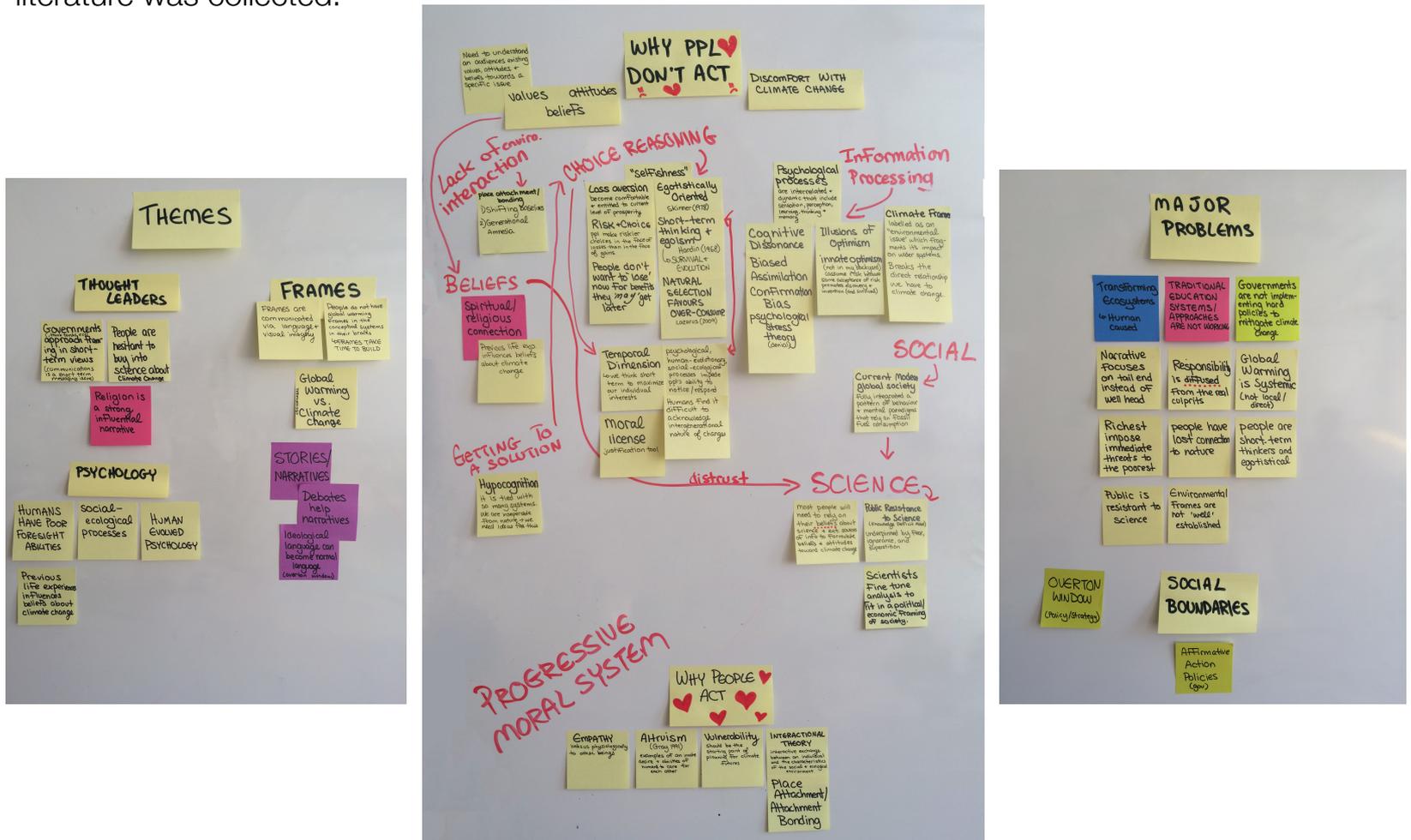


Exhibit Three

The synthesized information was organized into an Infographic, which helped establish the major themes of the overall literature review.

"BUT I LIKE MAKING GARBAGE"

Why People Don't Act

Everywhere has been transformed by human actions more rapidly and more intensively in the last 50 years than in any other period in history. Our environmental devastation is now at the point where only individuals are able to react in a way that might avert some damage.

REALITIES

Our planet is experiencing the significant impacts of climate change, which include changing weather patterns, rising sea levels, and more extreme weather events. Scientists are predicting an increase in the number of extreme weather events in the next 50 years.

From 1880 to 2012, average global temp. increased by **0.85°C**.

For each 1°C of temperature increase, grain yields decline by about 5%.

Since 1979, there has been **1.07 million km³** of ice loss every decade which contributes to sea levels rising.

Wheat, corn and other major crops have experienced significant yield reductions due to warmer climates in the past 40 years.

Without action, the world's average surface temperature is projected to rise over the 21st century and is likely to surpass 3 degrees Celsius this century—with some areas of the world expected to warm even more.¹

DRIVERS

Humans have created values and beliefs which are defined through perception, learning, thinking and memory. It is these values and beliefs that drive our actions.

Values & Beliefs

Psychology

In this context, psychology involves the reasoning and processing of all information when exposed to various experiences or types of information.

Discomfort

Since modern recorded history, people have not experienced climate change. In fact, humans began building cities during the last ice age. The last century from our perspective is the first time in human history that we have experienced a warmer climate in the past 4,000 years.

Values and Beliefs

Moral License

People good deeds can liberate individuals to engage in behavior that is unethical or problematic. Traditionally, these people acquire moral licenses through actions for fear of being or appearing immoral.²

Lack of Environmental Interaction

Interaction Theory suggests that an interactive exchange between an individual and the characteristics of the social and ecological environment influence the outcomes an individual derives from an experience.³ Our developing society impedes our connection to the natural world and our ability for individuals to form powerful affective and cognitive bonds with special settings.⁴

Religious/Spiritual Connection

An individual often associates his or her own connections with the environment as a spiritual and religious connection with a "higher power or God." This fuels the idea that man is above nature in a moral hierarchy and that nature is thus prey for human use and exploitation.⁵

Convenience is our first priority...

Throughout our history, society has required over-consumption as a means to achieve convenience and success.⁶

Popular behavioral and social psychological research suggests that humans are predisposed to follow evolutionary processes to act in ways that are oriented away and with short-term gains to the mind.⁷

Economist **Garret Hardin** theorized that natural selection has favored short-term thinking and optimism as a successful survival mechanism and evolutionary process. However, most evolutionary psychologists believe that natural selection favored those who were able to control and invest in their future.⁸

Psychology

CHOICE REASONING **U.S.** **INFORMATION PROCESSING**

Choice Reasoning

All the times of our decision making, we are influenced by our core psychological occurrences that impact our priorities, an affiliation with some convenience, and need from our connectivity with risk.

LOSS AVERSION

Loss aversion suggests that people value losses more than they value gains. People feel the pain of a loss more acutely than the pleasure of a gain. This is why people often choose to avoid a loss, even if the potential gain from the action is greater.

RISK AND CHOICE

People making rational choices in the face of losses compared to the face of gains. And people don't want to lose less for benefits they may receive later.⁹

TEMPORAL DIMENSION

We as a species have evolved to think in the very short term and reactives our individual interests. In the present, we prefer immediate rewards to delayed rewards. This is why we often choose to avoid a loss, even if the potential gain from the action is greater.

PARALYSIS & FEAR

There are many social feedbacks associated with attitudes to climate change, such as the behavioral effect of loss aversion, which is a cognitive bias that causes people to weigh losses more heavily than gains. This is why people often choose to avoid a loss, even if the potential gain from the action is greater.

Information Processing

When we are exposed to new information, there are various systems that occur in our data-related functions of our brains. Furthermore, they are intertwined and dynamic processes that include sensation, perception, learning, thinking and memory. All of which influence the information that we learn about climate change.

COGNITIVE DISSONANCE

Cognitive dissonance is the mental discomfort or psychological stress that occurs when a person holds two or more contradictory beliefs, ideas, or values. This is why people often choose to avoid a loss, even if the potential gain from the action is greater.

BIASED ASSIMILATION

Individuals may attempt to reduce the psychological tension by seeking cognitive dissonance by creating biased information that supports their existing beliefs. This is why people often choose to avoid a loss, even if the potential gain from the action is greater.

CONFIRMATION BIAS

Confirmation bias occurs when people search for information that is consistent with what they already think, feel, or believe. This is why people often choose to avoid a loss, even if the potential gain from the action is greater.

PSYCHOLOGICAL STRESS THEORY

Psychological stress theory suggests that individuals respond to a threat perceived as uncontrollable.

ILLUSIONS OF OPTIMISM

Individuals often believe that they are less likely to be affected by a disaster than others. This is why people often choose to avoid a loss, even if the potential gain from the action is greater.

INNATE OPTIMISM

Humans are innately optimistic and will often choose to avoid a loss, even if the potential gain from the action is greater.

CLIMATE FRAMES

Labelled as an environmental issue, which fragments its impact on wider systems. Break the relationship and focus on climate change.

One of the major results in the cognitive and brain sciences is that we think in terms of typically monocausal structures called "frames" sometimes "schemas". Frames exclude semantic, causal, relational between nodes, and responses to other frames. One cannot avoid framing. The only question is, whose frames are being activated—and hence strengthened—in the brains of the public.¹⁰

Discomfort

Most people rely on their beliefs about science and external sources of information to formulate beliefs and attitudes toward climate change.¹¹ That being said, climate change is different from other environmental issues because of issues of scope, uncertainty, and complexity, as well as temporal delays and the ethical considerations.¹² These varying factors cause an intangible discomfort within an individual psyche as there are different degrees of how the information gets registered.

KNOWLEDGE DEFICIT MODEL

Researchers have used the knowledge deficit model to explain public resistance to science, which is underpinned by fear, ignorance, and superstition.¹³

ROLE OF BELIEFS AND INFLUENCES

Religious beliefs¹⁴ and social influences¹⁵ may be especially important in the context of climate change. This may lead to crucial values and beliefs not being adopted by a large enough group which triggers positive change.

CONNECTIONS

A hallmark of effective environmental education and interpretation is connecting participants to concepts and resources, by facilitating powerful experiences well beyond providing facts and information.¹⁶ In lieu of these connections, these issues are disconnected from an individual's schema of being.

In short, we have evolved to think in the very short term (e.g. today) and to maximize our individual interests. This temporal dimension is extremely averse for the issue of climate change. As a group, the concept of climate change is unrelating as it has major and significant impacts in the distant future. We have evolved to think (not) in an individualistic (i.e. the individual) and immediate future and prefer immediate rewards and discount future gains.¹⁷

IN ACTION HYPOCOGNITION A PATHY DISINTEREST MISUNDERSTANDING

People act because:

Altruism **Empathy** **Interact. Theory**

People have an innate desire and ability for humans to care for each other (e.g. parents caring for younglings). It has been indicated that the altruism is not only present cross-culturally, but it also has been present throughout history. Examples include our propensity to provide labor to survive (e.g. hunting, gathering, etc.) or to provide care for the young (e.g. child care, etc.).¹⁸

Empathy has a physical basis in the mirror neuron system¹⁹ which links us physiologically to other beings (e.g. the polar bears) and to things (e.g. networks) in the natural world. This leads us to use inherent values in the natural world.

Place attachment or place bonding suggests that individuals form powerful affective and cognitive bonds with special resource settings. It provides the individual with a greater sense of belonging which enables greater motivation for action.

Looking Forward

More to explore:

- Role of money on people's decisions
- How an individual's contribution to climate change is related to mental health
- How the government/policies for this issue influence others
- How the decrease in media coverage has affected people's attention and role

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Thank you

“

Are you hopeful?

No, I'm not hopeful. But if we don't try, we are guaranteed to fail.

”

-Amy Goodman and Ian Chubb