Applying Construal Level Theory to Communication Strategies for Participatory Sustainable Development

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Abstract: To the vast majority of people, the terms "sustainability" and "sustainable development" are unfamiliar, and, when they are recognized, there is still a great deal of interpretability as to their significance. Since no consensus exists regarding these terms, communication efforts to promote action and awareness among citizens must invariably "frame" the issue of sustainable development in one way or another. By and large, most communication strategies promote small private-sphere actions relevant to patterns of consumption. While these small actions are helpful, participatory, collective, public-sphere activism towards sustainability is much more potent and desirable. In attempting to engage this type of participatory action, communicators must understand the psychological barriers that are likely to confront their efforts. Communication professionals recognize that one such barrier, that of perceived, or, *psychological distance*, from issues of non-sustainability is especially pernicious. This paper attempts to apply Construal Level Theory (CLT), which provides "an account of how psychological distance influences individuals' thoughts and behavior" (Trope et al. 2007) to the design of communication strategies for participatory sustainable development. After providing a thorough review of CLT, the authors examine the many ways that the theory can contribute to the design of communication strategies for participatory sustainable development.

Keywords: Construal Level Theory, psychological distance, high construal mindset, framing, participatory sustainable development.

Statement of Contribution

This thesis is the result of a collaborative group process. It was written over the course of 5 months, from mid-December, 2009 until mid-May, 2010.

We formed our research group around a shared acknowledgement that, in order to inspire widespread citizen participation in our global transition towards sustainability, attempts at communication will have to resonate with the shared values and concerns of everyday citizens around the world. We were inspired by Dr. Karl-Henrik Robèrt's call for the need to find a "story of meaning", and our thesis can be seen as a response to his question: "How can a story (of meaning) be authentic enough to win the hearts of modern people in the age of information technology and big cities?" (Robèrt 2002).

Our research topic assumed several incarnations. For the first 6 weeks we struggled to synthesize our many questions into a coherent research trajectory. Strongheart took the initiative to contact experts from an array of backgrounds, each of whom helped us find a different "piece of the puzzle". In attempting to answer Robèrt's critical question, we sought a comprehensive understanding of the psychological barriers that are likely to confront communication efforts. Bordoni took the lead in this stage of research, though all group members were intimately involved.

All group members contributed to the writing process. With each new wave of writing we distributed tasks, examined each other's work and made collective editorial decisions. So as to achieve ontological symmetry and a fluid writing style, Strongheart wrote the final synthesis of the entire work.

Obison was very much the lifeline of the project, making sure that our discussions and research endeavors stayed true to the original impetus that brought us together. Bordoni single-handedly created all of the figures in this thesis.

Ultimately, however, everything should be attributed to our "group"—that entity that is much more than the sum of its parts. Cross-cultural, transdisciplinary and group-based research is both highly rewarding and highly challenging. Given the importance of this type of research to the future success of sustainable development, we are grateful to have had the opportunity to work together.

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Executive Summary

Introduction

A successful transition towards sustainability is unlikely to be realized without the collective effort of a significant percentage of the world's citizens. In attempting to engage everyday people in significant actions towards sustainability, the design of effective communication strategies at all scales and via multiple media becomes critically important.

Predominant communication efforts for sustainable development have focused on promoting awareness through a number of strategies. Attempts to engage citizens have thus far focused predominantly on small changes to private-sphere behavior and small adjustments to consumption patterns. However, even the most "sustainable" products available to consumers rely on inherently non-sustainable patterns of production and distribution. While they represent an important start, small consumer actions are incapable of changing the non-sustainable course of our global society.

History has shown that dedicated, collective citizen actions have immense potential to reshape the world. For the ultimate success of sustainable development, there is a great need to promote collective, public-sphere actions consciously aimed at redirecting society away from non-sustainable lock-in, and towards comprehensive sustainability. In this thesis, we refer to such actions as *participatory sustainable development*.

In attempting to enlist willing participants in participatory action agendas, communicators will confront a number of *psychological barriers*. Psychological barriers to action represent subjective psychological conditions that can be affected by individual acts of free will. In order to maximize participation in collective action agendas aimed at removing environmental barriers to sustainability, communicators must attempt to dissolve the psychological barriers that inhibit participatory action. One primary psychological barrier to participatory citizen action is the fact that most people tend to view global problems of non-sustainability as distant, abstract and irrelevant to their daily lives.

Most problems of non-sustainability are notoriously subtle and imperceptible. They involve chemical reactions and nutrient cycles that occur on microscopic scales, and also biogeochemical and climatic cycles that operate at the scale of the entire planet. Furthermore, the negative

effects of a given action may involve time-delays of decades—even centuries and are likely to manifest far from their place of origin. As such, in order to comprehend the dynamics behind non-sustainability, we are required to think in abstract dimensions of time and space, and to see connections between complex and seemingly unrelated events. Ultimately, we are required to connect these dynamics in some meaningful way to our everyday lives.

Because of the subtle nature of problems of non-sustainability, most people will inherently perceive these problems at a high psychological distance. This barrier of perceived, or *psychological distance* causes people to feel that global problems are distant, and not likely to present a serious threat to their lives. In attempting to address this barrier, communicators have attempted to induce a sense of psychological proximity to problems of non-sustainability through the use of *alarmist* communication strategies.

Alarmist strategies attempt to reduce psychological distance by creating the perception of risk in the audience. However, alarmist communication tactics have been shown to have negative psychological effects, and they are at a disadvantage, since peoples' everyday experiences reinforce the sense of psychological distance from global problems. There is a need to approach the barrier of psychological distance from global problems through different tactics that are more effective over the long term.

Construal Level Theory is a social psychological theory that provides "an account of how psychological distance influences individuals' thoughts and behavior" (Trope et al., 2007). Construal Level Theory (CLT) provides a unified theory of psychological distance, identifying four dimensions upon which psychological distance occurs: *spatial* distance, *temporal* distance, *social* distance, and *hypotheticality* (perceived probability).

According to the theory, the perception of psychological distance is a central moderator of human thoughts and behaviors. When events, actions or objects are perceived as psychologically distant—on any of the four dimensions of distance identified above—they are represented in a fundamentally different way than when they are perceived as psychologically near. In social psychological terms, psychological distance affects human beings' mental *construal*, or, the subjective mindset through which they interpret their experience. In instances of psychological distance, a *high construal mindset* is used, while a *low construal mindset* is used in instances of psychological proximity.

After nearly 13 years of research in Construal Level Theory, a great number of discoveries have been made regarding the specific dynamics behind the barrier of psychological distance, and the effect that it has on the human psychology. This paper provides an exploration of the significance of Construal Level Theory to the design of communication strategies for participatory sustainable development. As a strategic tool, CLT offers invaluable insight regarding how communication strategists can most effectively overcome the barrier of perceived psychological distance.

Research Question and Scope

The primary research question guiding this thesis was, "How can Construal Level Theory help to address the barrier of perceived psychological distance in the design of communication strategies for participatory sustainable development?" Our research focused on the areas of social psychology, communication theory and sustainable development. While we attempted to focus our agenda on communication strategies relevant to the comprehensive aims of sustainable development, most of the resources we identified were limited to climate change.

Methods

No primary research was conducted for this thesis. The completed paper represents our findings from reviewing the literature in communication theory, sustainable development and social psychology and synthesizing the results according to our agenda. Our research methodology assumed four stages.

The first phase of our work consisted of examining commonly used practices in current communication agendas. This was necessary to identify the best methods by which CLT could be used as a strategic tool by the communication professional. After extensive review of the literature in communication theory, we identified *framing* (section 1.4) as the communication practice that would be most useful in this regard.

In the second phase of our research, we examined predominant framing practices relevant to sustainable development. We then examined these predominant communication frames through the lens of CLT, seeking specific predictions that CLT would make as to their probable effectiveness.

The third phase of our work consisted of identifying specific framing practices for which CLT would predict success. After examining the objective predictions that result from applying CLT to strategic CPSD practices, we next sought to contextualize these predictions within the independent findings of communication professionals and general practitioners in the field of sustainable development. By comparing CLT's findings—which emerge from a controlled experimental environment—with the "real world" findings of professionals and practitioners in communication for sustainable development, we sought to gain additional (indirect) evidence regarding CLT's predictions.

In the fourth and final stage, we applied our knowledge of Construal Level Theory to the design of strategic communication frames aimed at overcoming the barrier of psychological distance from global problems of non-sustainability. We also sought-out existing communication frames that would be effective, according to CLT's predictions.

Results

Research in Construal Level Theory has shown that people regard psychologically distant experiences and actions very differently from those that are psychologically proximal. People utilize very different subjective mental mindsets as the basis for action in psychologically distant vs. psychologically proximal circumstances. From CLT's perspective, it is strategically ill-advised to attempt to decrease the perception of psychological distance from global problems. Instead, communication strategists should attempt to achieve resonance with the subjective mental mindset that naturally forms the basis for action in response to psychologically distant problems of non-sustainability.

According to the predictions of CLT, currently dominant communication frames—the *alarmist* and *consumer action* frames—are unlikely to be successful in mobilizing citizen action in response to global problems of non-sustainability. The theory offers some very specific predictions regarding what types of communication frames will be most strategic in overcoming the barrier of perceived psychological distance. Based on CLT's predictions, we designed 11 strategic communication frames that are likely to help the communicator to overcome the barrier of perceived psychological distance. These frames are as follows:

1) *Values-based Frame*. CLT research suggests that peoples' abstract, central values, as well as widely-held, *societal* values, are more prominent

in psychologically distant circumstances, and would be a strategic platform from which to mobilize action towards participatory action.

2) *Idealistic Self Frame*. Peoples' sense of their "true identity", or their *idealistic self*, is more prominent in psychologically distant circumstances. Attempting to appeal to this dimension of the citizenry is therefore likely to help to mobilize action in response to psychologically distant global problems.

3) *Idealistic Self as Altruist*. Altruistic action is one dimension of peoples' idealistic self. By framing participatory actions so as to emphasize their altruistic dimensions, citizen involvement towards sustainability is likely to increase.

4) *Idealistic Self and Well-Being Frame*. Abstract notions of "well-being" and "quality of life" are more likely to resonate with a majority of people than pragmatic motivational factors that exclusively emphasize material benefit.

5) *Spiritual Dimensions of the Idealistic Self*. Peoples' sense of personal spiritual fulfillment is another dimension of the idealistic self. This "spiritual self" can be the basis for action in psychologically distant instances.

6) *Idealistic Self and Participatory Citizenship*. The "self-in-society" is a psychologically distant representation of the self. Notions of participatory citizenship are therefore a natural basis for action in response to psychologically distant global problems.

7) *Social Movements and Collective Action Frames*. Joining social movements and participating in collective action agendas include the individual in a larger, collective identity. Communication frames are likely to be more strategic if they emphasize the collective dimensions of global problems and the need for collective solutions.

8) *Cold Frame*. Emotionally charged communication frames do not provide a natural basis of action in response to psychologically distant global problems. Communication strategists should therefore seek to design emotionally neutral communication frames.

9) *Cognitive Empathy Frame*. Empathy has affective dimensions, where direct perception is involved, and *cognitive* dimensions, where empathy

results from a mental representation. According to CLT, the latter will be more effective in appealing to citizens' empathy regarding global problems of non-sustainability.

10) *Systems Perspective Frame*. Understanding global problems from a perspective that simplifies complex relationships into a "whole system" perspective is likely to resonate with the subjective psychological mindset that is most prominent in instances of psychological distance.

11) *Evolutionary Frame*. CLT would predict that communicating problems of non-sustainability in terms of long, evolutionary time scales is a strategic way to navigate the subjective psychological biases of everyday citizens.

Discussion

Construal Level Theory is widely regarded as one of the most influential social psychological theories in decades. Thus far, most research has focused on consumer psychology, and it is only in recent years that it has been applied to research that is specifically relevant to sustainable development. Given that the barrier of perceived psychological distance is a major barrier to participatory citizen actions, and given that this barrier is the primary focus of CLT research, it is likely that CLT's findings will play an important part in the design of communication strategies in the years to come.

Many of Construal Level Theory's predictions run in direct conflict with current practices and commonly held assumptions in communication agendas aimed at behavior change. While it may seem almost self-evident that communication strategists should attempt to *decrease* the perception of psychological distance from global problems, CLT forces us to reconsider this assumption. Specifically, the theory presents us with a detailed picture of the subjective psychological mindset that is naturally prominent when citizens consider psychologically distant global problems. Communications should attempt to resonate with this mindset in order to achieve maximum citizen participation towards sustainability.

Many of the attributes associated with the *idealistic self*, which is prominent in instances of psychological distance, are attributes that, if reinforced and maximized in everyday people, would prove very beneficial for the overall aims of sustainable development. The ability to think in long time scales, consideration of others, increased self-control and altruistic behavior are all associated with the mental construal that is prominent in

instances of psychological distance. Construal Level Theory would suggest that, by appealing to these dimensions of citizens, communication strategists are likely to achieve optimum results.

Conclusion

Our research was aimed at increasing communication strategists' understanding of the barrier of perceived distance from global problems. Mastering this barrier would be a significant step towards increasing participatory citizen action in sustainable development. CLT is indispensible in this effort, and it should hold an important place in the toolkit of communication strategists working on behalf of the goals of sustainable development. As research continues, our understanding of this barrier will increase, as will our capacity to address it with increased precision. Given that our thesis is the first effort in applying CLT to the design of communication strategies for sustainable development, we hope that it forms the initial venture into a domain of research that will be widely explored in the years to come.

Glossary

Abstract: Simple, less detailed and more intangible representations, not intimately bound to direct sensory perception (Liberman et al., 2007), as opposed to *concrete* representations (see below).

Affective Empathy: A form of empathy where the subject's emotional state is a result of direct perception of the object's state (Nava 2007).

Cognitive Empathy: A form of empathy where the perceiver mentally represents the object's state (Nava 2007).

Cognitive Science: The interdisciplinary study of the mind and intelligence, embracing philosophy, psychology, artificial intelligence neuroscience, linguistics and anthropology (Stanford Encyclopedia of Philosophy).

Communication for Participatory Sustainable Development: Communications at any scale and via any medium that attempt to engage participatory sustainable development.

Concrete: Features or mental processes characterized by literality and detail, which tend to be bound to the most immediate and obvious sense impressions, as well as by a lack of generalization and abstraction.

Construal: A subjective mental interpretation that explains or gives meaning to something.

Construal Level Theory: A theory that provides an account of how different dimensions of psychological distance influences individuals' thoughts and behavior (Trope et al., 2007).

Cultural Capital: The "evolving stock" of culture as defined below.

Cultural Innovation: A conscious process by which new, sustainable patterns of cultural evolution are sought out.

Cultural Lock-In:	The evolving stock of non-sustainable structural, psychological and cultural patterns, social norms and values that have acquired prodigious force by virtue of their deeply entrenched and continually reinforcing nature.
Culture:	The totality of knowledge, skills, rules, standards, prohibitions, strategies, beliefs, ideas, values, and myths passed from generation to generation and reproduced in each individual, which controls the existence of the society and maintains psychological and social complexity (Morin 1999).
Efficacy:	A sense that one has the capacity or ability to do what is necessary to produce a desired outcome (Snow & Soule 2010).
Framing:	The setting of an issue within an appropriate context so as to achieve a desired interpretation or perspective (Shome and Marx 2009).
High Construal Mindset:	Prominent mental construal in instances of high psychological distance and in which high construal variables are salient. Also called *abstract mindset*.
High Construal Variables:	Numerous psychological traits, behavioral tendencies, and qualities of construal, which become salient in instances of high psychological distance.
Idealistic Self:	Mental representation of the self that places principles and values above practical consideration and seeks to explain a person's sense of true self (Kivetz and Tyler 2006).
Low Construal Mindset:	Prominent mental construal in instances of low psychological distance and in which low construal variables are salient. Also called *concrete mindset*.
Low Construal Variables:	Numerous psychological traits, behavioral tendencies and qualities of construal, which become salient in instances of low psychological distance.

Participatory Sustainable Development:	Collective, public-sphere actions consciously aimed at redirecting society away from non-sustainable lock-in, and towards comprehensive sustainability.
Pragmatic Self:	An action oriented mental representation that is primarily guided by practical concerns (Kivetz and Tyler 2006).
Priming:	The transfer of an activated concept to an unrelated context (Wakslak and Trope 2009a). Very often used to activate shared social and cultural knowledge structures (Bargh 2006).
Psychological Barriers:	Barriers to concern and/or action, which represent subjective psychological conditions that can be altered by individual acts of free will.
Psychological Distance:	An individual's perception of their direct experience of reality in relation to time, space, social relationship and probability (Liberman et al., 2007b).
Salience:	The quality of being relatively more prominent than something else.
Values:	Values define or direct us to goals, frame our attitudes, and provide standards against which the behavior of individuals and societies can be judged. Values are also relatively abstract and trans-situational (Leiserowitz et al., 2004).

Contents

List of Figures and Tables

List of Abbreviations

4SPs:	4 Basic Principles for Sustainability as defined in the research of Karl-Henrik Robèrt et al.
APA:	American Psychological Association
BTH:	Blekinge Institute of Technology
C4D:	Communication for Development
CID:	Harvard University's Center for International Development
CLT:	Construal Level Theory
CPSD:	Communication for Participatory Sustainable Development
FAO:	Food and Agriculture Organization of the United Nations
FSSD:	Framework for Strategic Sustainable Development
GSG:	Global Scenario Group
IHOPE:	Integrated History and Future of People on Earth
IPCC:	Intergovernmental Panel on Climate Change
IUCN:	International Union for Conservation of Nature
MEA:	Millennium Ecosystem Assessment
OECD:	Organisation for Economic Co-Operation and Development
PDC:	Participatory Development Communication
UNDP:	United Nations Development Program
UNEP:	United Nations Environment Program
UNESCO:	United Nations Educational, Scientific and Cultural Organization
WBCSD:	World Business Council for Sustainable Development
WCED:	World Commission on Environment and Development
WWI:	World Watch Institute

1 Introduction

The most universally embraced definition of sustainable development is that which emerged from the 1987 Brundtland commission report *Our Common Future*: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987). While this definition provides a philosophical guide for developmental decisions, some attempts have been made to define sustainable development according to science-based principles.

1.1 Basic Principles for Sustainability

A recent report titled *Research on the Scientific Basis for Sustainability* examines the question of sustainability from a purely scientific stance (RSBS 2006). In this report, 170 scientists endorsed the *4 Sustainability Principles* (4SPs), which originated from the research of Karl-Henrik Robèrt (Robèrt 2002). Robèrt identifies four basic conditions that must be met in order for a society to achieve sustainability. These four principles present the minimal conditions with which any entity or organization on the Earth must comply in order to be sustainable. The 4SPs are as follows: "In a sustainable society, nature is not subject to systematically increasing:

- concentrations of substances extracted from the Earth's crust,
- concentrations of substances produced by society,
- degradation by physical means and, in that society,
- people are not subject to conditions that systematically undermine their capacity to meet their needs" (Holmberg and Robèrt 2000; Ny et al. 2006).

The 4SPs are grounded in basic laws of thermodynamics and constitute one of only a few attempts to achieve a robust scientific definition of sustainability (RSBS 2006; Decleris 2000; Daly 1996).

1.1.1 Backcasting from Sustainability Principles and the ABCD process

Robinson (1982) first introduced the term "backcasting", though he credits the origins of the concept to Amory Lovins (Dreborg 1996). Backcasting is an approach to planning which begins with an envisioned future state. All actions that emerge from the planning process are discussed and selected

based on their ability to lead to the envisioned goal. A backcasting planning technique can be used in combination with the 4SPs (Holmberg and Robèrt 2000) in a simple, 4-step process called the "ABCD process" (Ny et al. 2006). In step A, the future state is envisioned, and the "rules" and context of the backcasting process are defined. This includes the 4SPs as well as any contextual information relevant to the entity's (organization, business, municipality, etc.) transition towards sustainability. In step B, the entity's current reality is examined, and all transgressions of the 4SPs are identified. In step C, a brainstorming session is conducted to identify possible strategies and actions to begin the entity's transition towards sustainability. Step D consists of prioritizing the ideas from the C-step into a viable and coherent plan of action. Figure 1.1 illustrates backcasting from the 4SPs using the ABCD process:

Backcasting
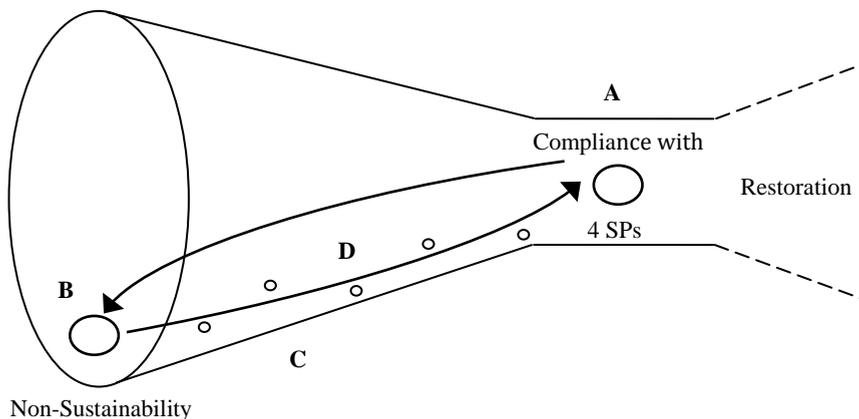
Figure 1.1. *Backcasting from Basic Principles of Sustainability.*

1.1.2 Systemic Nature of Problems of Non-Sustainability

Robèrt et al. (2004) states that the "Unsustainable society can be visualized as entering deeper and deeper into a funnel in which the space for deciding on options is becoming narrower and narrower per capita" (Robèrt et al., 2004). The metaphor of the funnel shows that the problems related to non-sustainability are *systemic* in nature, which means that these problems are bound to grow worse due to the design flaws inherent in society, and due to

the steady increase in population and the scale of the global economy. The backcasting approach to planning allows for the strategic design of actions, so as to lead an entity (i.e., municipality, business, organization) steadily towards the unwavering goal of sustainability, as defined by the 4SPs. The "clearing" in the funnel signifies the attainment of sustainability. *Regeneration*, where our non-sustainable world is made increasingly more sustainable, is depicted by the dashed, upward sloping lines (Figure 1.1).

1.1.3 Framework for Strategic Sustainable Development

In order to further simplify planning for sustainability within a complex system, backcasting can be used in conjunction with the "Framework for Strategic Sustainable Development (FSSD) (Robèrt et al. 2002). This five level framework utilizes backcasting and the 4SPs in order to plan for sustainability within a complex system. The FSSD can be used *specifically* in planning for sustainability, and also as a generic framework to assist in any planning venture within a complex system. In this capacity, our research team utilized the FSSD as an informal guide to help structure our research and our writings. In the final chapter of our thesis, we offer suggestions as to how the findings from our research might be used by sustainability practitioners working with the FSSD.

The work of Karl-Henrik Robèrt began with the realization that, prior to human intervention, sustainability was the natural condition on planet Earth. Non-sustainability is the direct result of human intervention, and in attempting to re-direct our societies back towards sustainability, we must seek a comprehensive understanding of the dynamics that perpetuate non-sustainability. One such dynamic is the entrenchment of our cultural and societal systems into repetitive patterns of non-sustainability, also known as "lock-in".

1.2 Cultural Capital and Cultural Lock-In

The concept of *cultural capital* has been used to signify "the evolving stock" of culture (Knott et al., 2008). For our thesis, we use the term to signify the "evolving stock" of culture as defined by Morin: "Culture is made of the totality of knowledge, skills, rules, standards, prohibitions, strategies, beliefs, ideas, values, and myths passed from generation to generation and reproduced in each individual, that controls the existence of the society and maintains psychological and social complexity" (Morin 1999).

3

From Morin's definition, we can see that the evolving stock of cultural capital includes subjective psychological factors as well as the structural and legal dimensions of a society. The flow of cultural capital is multi-directional, and no action is inert—everything that gets "done" creates a shift in the overall flow (see Figure A.1.2, Appendix 1). The current flow of cultural capital is non-sustainable. Any attempt to redirect this flow towards sustainability must contend with a prodigious momentum that is reinforced by the daily actions of nearly 7 billion human beings. By virtue of this prodigious momentum, global society is largely locked-in to a non-sustainable trajectory of development.

The term *lock-in* is often used in sustainable development literature, and denotes "structural problems" that are antithetical to sustainable development and are "deeply rooted in social production and consumption patterns" (Elzen et al., 2004). The term is most often used in conjunction with other words, as with *technological* lock-in and *institutional* lock-in. However, it has also been recognized that lock-in at the level of culture, or *cultural lock-in*, represents a pernicious barrier to sustainable development (Elzen et al., 2004). As we define it in this thesis, cultural lock-in to non sustainability is *the evolving stock of non-sustainable structural, psychological and cultural patterns, social norms and values that have acquired prodigious force by virtue of their deeply entrenched and continually reinforcing nature* (See Appendix 1).

1.2.1 Cultural Innovation

Recognition of cultural lock-in to non-sustainability is a sobering realization, and it gives rise to the obvious question: "What can be done about cultural lock-in?" In the literature discussing the various levels of non-sustainable lock-in, we read that *innovation* is the way to breakout of patterns of lock-in (Elzen et al. 2004). Thus, *cultural innovation* can be seen as a conscious process by which new, sustainable patterns of cultural evolution are sought out. This perspective is closely related to the "voluntarist" approach to social innovation identified by Dobson (2007).

For communicators who are engaged in helping to promote pathways of innovation by which destructive patterns of cultural lock-in can be overcome, decisions must be made as to which dimensions of cultural capital are targeted in a communication agenda. Communication agendas tend to target either government, business or the citizenry (Crompton 2008). If government is targeted, innovation is sought through changes in policy and regulatory strategies. If business is targeted, innovation is sought

4

through new patterns of production and exchange. In targeting citizens, innovation is sought through the promotion of new patterns of consumption and private sphere behavior as well as public sphere activism.

Many of the most pressing concerns related to non-sustainability are directly linked to the global citizenry, particularly non-sustainable consumption patterns (Jackson and Michaelis 2003). Since demands from the citizenry have a unique potential to affect change in both business and government (Knott et al. 2008), the level of involvement of global citizens in significant actions towards sustainability is a key factor determining the future success of sustainable development (Raskin et al. 2002). For the current work, we will focus on communication strategies that target cultural innovation through citizen engagement.

1.3 Communication for Participatory SD

For this thesis, we focus on communication efforts that emphasize the mobilization of public actions towards changing the non-sustainable course of our society. Traditional definitions of "pro-environmental behavior" (Reid et al. 2009) do not necessarily reflect actions that have the potential to break pernicious patterns of cultural lock-in to non-sustainability. So-called "simple and painless" consumer actions (Thogersen and Crompton 2009) do not indicate the level of involvement by citizens that is needed for a successful transition towards sustainability. We have thus opted to use the phrase "communication for participatory sustainable development" (CPSD) to indicate communications that aim to engage collective, public-sphere activism consciously aimed at redirecting society away from non-sustainable lock-in, and towards comprehensive sustainability. While our definition emphasizes non-consumer activities, it also includes responsible consumer choices, which are a significant dimension of citizen participation for sustainable development.

The basic parameters of our definition largely follow the classification by Stern of *activist* behavior, which denotes public sphere activism, including but transcending, private sphere consumer actions. However, because of the potentially negative connotations of the word "activism", and because, at times, effective behavior towards sustainability might involve *non-activism*—non-action—we have opted for the more broad definition of "participatory sustainable development". Cultural innovation, being the conscious, participatory re-design of non-sustainable cultural patterns, can be regarded as a major dimension of participatory sustainable development.

1.3.1 Strategies for CPSD

While there is healthy recognition for the importance of communication within the context of sustainable development, it still remains a relatively low priority on the "agenda" for sustainable development (OECD 1999; GTZ 2006). To some extent, most current strategies for communication for sustainable development draw upon *environmental communication*. While environmental communication often denotes the ways in which people communicate *about* nature (Littlejohn and Foss 2009), it can also be defined in relation to agendas for action. Cox (2010) states that, "Environmental communication seeks to enhance the ability of society to respond appropriately to environmental signals relevant to the well-being of both human civilization and natural biological systems" (Cox 2010).

1.3.2 Communications for Development & Participatory Development

No attempt has been made to differentiate "communication for sustainable development" as a unique discipline within communication theory, distinct and non-overlapping with other disciplines. *Development communication*, or *communication for development* (C4D) does occupy a distinct branch of communication theory (Gumucio-Dragon and Tufte 2006). It is often used as an umbrella term for communications aimed at addressing "pressing social issues" (Gumucio-Dragon and Tufte 2006). For 15 years, the UN has hosted its biannual Inter-Agency Roundtable on Communication for Development. Each Roundtable concentrates on a particular branch of UN-led development efforts. The 2004 Roundtable, held in Rome, focused exclusively on sustainable development (FAO 2005), and the overall agenda of the Roundtable appears to be shifting more towards sustainable development—with the fulfillment of the Millennium Development Goals as a primary strategic focal point (UNDP 2009).

The 2004 UN Roundtable highlighted Participatory Development Communication (PDC). PDC can be considered a branch of C4D and, "denotes the theory and practices of communication used to involve people in the decision-making of the development process" (Mefalopulos 2003). It is grounded in theories of social justice, and is closely related to social change communications (Gumucio-Dragon and Tufte 2006). In 2007, the UN Roundtable declared, "The era during which communication development concepts were more or less determined by communication debates that were vertical versus horizontal, or top-down versus bottom-up, is now history" (UNESCO 2007). From the above examination, it appears

that the official agenda of C4D may be shifting more towards communication aimed at participatory, bottom-up sustainable development.

1.3.3 Other Communication Agendas Linked to "Sustainability"

There are a number of other dimensions to "communication" that are—at least nominally—relevant to sustainable development. The Dow Jones Sustainability Indexes, which introduced the concept of "sustainability" to investment circles (Doane 2005), states that, "sustainability is a business approach that creates long-term shareholder value by embracing opportunities and managing risks…" (Dow Jones Sustainability Indexes). From this quotation, we can see that not all communication agendas linked to "sustainability" will necessarily be relevant to the comprehensive vision of sustainable development put forth in the Brundtland commission report.

In the public sphere, the word "sustainability", is becoming increasingly difficult to define, and is often used interchangeably with the term "green". In a cursory online search, we found evidence of several thousand definitions of "sustainability" (Emrgnc 2010). It can thus be seen that a variety of different agendas, emphasizing a variety of different meanings, are housed under the banner "sustainable development". A recent report examining the "connotative meanings of both established and some newly coined sustainability terminology" noted, "most people working in a sustainable development discipline know that their lexicon is often invisible to the majority of the public, and at worst alienating and off-putting to many non specialists" (Futerra 2007). Communicators cannot safely assume that people will know what they're talking about when they say "sustainability" or "sustainable development". Indeed, even communications that aim for complete objectivity are likely to activate preconceived notions, which, once activated, will color the public's perception of the topic (Shome and Marx 2009).

Given the absence of a clear and easily understood definition of "sustainable development", the role of the communicator may be more closely likened to that of an interpreter. Communication practitioners are charged with the difficult task of translating an inherently slippery concept into a language that can be easily understood by the public, such that it is both accessible and scientifically accurate, and, ultimately, capable of inspiring action. In attempting to accomplish this heroic task, communication professionals often turn to the art of *framing*.

1.4 Framing

Framing and "frames" can have two meanings in communication theory. The first meaning deals with "socially shared…organizing principles…that work symbolically to meaningfully structure the world" (Frameworks Institute 2005). A "frame" from this perspective signifies a pre-existing structure of shared cultural and social knowledge. A more common terminology for these shared, societal frames, however, is *schema* (McDonald 2009). People use these shared mental schema to interpret communications, or any other experience. Awareness of, and activation of, these social and cultural schemas, is an important consideration in the design of communication strategies for sustainable development.

Our use of the terms "frame" and "framing" in this paper will reflect their more common use within communication theory. Framing can be defined as "the setting of an issue within an appropriate context to achieve a desired interpretation or perspective" (Shome and Marx 2009). From this perspective, a frame is a subjective factor by which communicators manipulate information in order to achieve the specific purposes of the communication agenda. Practically, framing is accomplished by emphasizing certain dimensions of a communication so as to achieve the desired response in the target audience. One author states that framing has the power to "render events or occurrences meaningful and thereby function to organize experience and guide action" (Benford & Snow 2000). Thus, a single issue can potentially be given a variety of different meanings by manipulating the communication frame.

Framing practices appear to be commonly utilized in communication efforts relevant to sustainable development (McDonald 2009; Frameworks Institute 2005; Shome and Marx 2009). Because of the wide range of possible meanings and interpretations of the words "sustainability" and "sustainable development", framing is a necessary and important aspect of strategies for CPSD. In practice, framing is usually accomplished by manipulating the *salience* of information in a communication.

1.4.1 Framing and Information Salience

For the current work, we define the word salience to mean "the quality of being relatively more prominent than something else". To increase information salience simply means to make one issue or feature more prominent than another. By manipulating the relative salience of a body of information, the communication becomes "framed" according to the

information that has been made salient[1]. For communication frames to activate the desired response, information should be made salient that is likely to resonate with the shared cultural schema of the target audience. Communication frames are potentially infinite, since they can arise in response to specific issues and the specific barriers pertinent to the target audience that are likely to confront the communicator (Frameworks Institute 2005). We will examine strategic framing practices with specific reference to our thesis topic in chapter 3.

1.5 Predominant Communication Strategies for SD

The first (post-Brundtland) call for the design of communication strategies relevant to sustainable development appears to have come from *Agenda 21*, which resulted from the 1992 Earth Summit in Rio de Janiero (UN 1992). Two distinct threads relevant to communication can be identified in *Agenda 21*. The first thread, found in chapter 4 of *Agenda 21*, can broadly be referred to as "behavior change", while the second thread, found in chapter 5, can be called the "information approach" (Gleyzes 2007) to communication.

The behavior change and the information approaches operate reciprocally, with the information approach intended to catalyze behavior change. For the last two decades, these reciprocating threads have formed the main basis for the design of strategies for sustainable development communications (Nerlich et al. 2010; Gleyzes 2007), and have led to a number of different strategic approaches.

The information thread of *Agenda 21*'s call to action has resulted in a variety of communication frames aimed at catalyzing behavior change consistent with the aims of sustainable development. At the most general level, predominant communication efforts present information through what can be called a "consumer frame", where behavior change is sought through consumer actions. This approach anticipates that information will raise awareness and evoke concern within people, which will hopefully catalyze a change in consumption patterns. However, a great amount of evidence shows that increased information about global problems of non-

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[1] In a portion of the literature we reviewed, the term "salience" was equated with an increased sense of urgency and/or an increased sense of personal importance of an issue (McDonald 2009). From this perspective, to make something "salient" would imply increasing the perceived urgency or sense of personal relevance. While making a given feature more salient than another might increase the perceived importance of that feature, the word "salience" as we use it is not synonymous with perceived urgency.

sustainability does not necessarily translate into behavior change (APA 2009; Kellstedt et al. 2008; Leiserowitz et al. 2004). Efforts to mobilize participatory action must contend with a number of complex, interconnected factors, which can collectively be referred to as "barriers" to participatory sustainable development.

1.6 Barriers to CPSD

Communication efforts promoting sustainability will encounter a variety of different types of barriers to success. A broad classification can be identified between *environmental* barriers, *neurological* barriers and *psychological* barriers. Environmental barriers often pertain to entrenched economic and/or cultural paradigms, and are alternately known as structural, systemic, and/or institutional barriers. Neurological barriers are cognitive mechanisms that have evolved over hundreds or thousands of years as the result of evolutionary adaptation and repetitive neurological processing. Psychological barriers pertain mainly to our *perception* of the world. These barriers are subjective representations, and can presumably be overcome by individual acts of free will.

Drawing distinctions between environmental, neurological and psychological barriers is not entirely straightforward. Subjective aspects of human identity such as values, beliefs and knowledge are inextricably connected to legal and infrastructural aspects of our society, our institutions, organizations, and also the cultural artifacts that epitomize our collective identity. Citizens are "locked in to current consumption patterns by a combination of market incentives, psychology and conditioning, social structures and norms, institutional frameworks, cultural values and narratives" (Jackson and Michaelis 2003). A comprehensive report by the American Psychological Association states that the attitude-behavior gap— a phenomena that explains that, while people may be *concerned* about global problems, they will often fail to take *action* in response—"is caused by both structural and psychological barriers to action" (APA 2009), and a UNEP report titled *Communicating Sustainability* states that "Good communications can often be successful in persuading people that they have a role to play in sustainable development. But this opportunity will be wasted unless the infrastructure is there for them to make a contribution" (Shea and Montillaud-Joyel 2005). Thus, even if individual interest is mobilized, environmental barriers to action may render communication efforts unsuccessful.

In our research, we found significant appreciation for the two-way flow of culture, values, ideas and beliefs between the individual and society. Drawing rigid demarcations between environmental, psychological and neurological barriers is difficult and of limited use, and is likely to miss the subtle interplay between specific circumstances, specific actions, and specific barriers to action (Leiserowitz et al. 2004). Some authors even suggest that such demarcations could *inhibit* the identification of solutions to these barriers (APA 2009). Nonetheless, as an attempt to properly scope our thesis, we focused our research on the psychological barriers to CPSD.

1.6.1 Psychological Barriers to CPSD

Psychological barriers are distinguished from neurological and environmental barriers in the level of immediate control available to the individual to overcome the barrier. While environmental—and perhaps even neurological—barriers can, at times, be overcome, dismantling them requires intervention into a structured system. In the case of environmental barriers, the structured system is society, or one's environment; in the case of neurological barriers, the structured system is the "wiring" of the human brain. Environmental barriers *can* be comprehensively addressed through action, but only action of the *collective* kind. Psychological barriers, on the other hand, are inherently subjective, and can presumably be overcome by individual volition, or by intervention of the communicator.

1.6.2 Psychological Reactions to Environmental Barriers

Many psychological barriers, however, such as sense of inefficacy, apathy, anxiety, and denial, may be more appropriately classified as psychological *reactions* to environmental factors. Roser-Renouf and Nisbet (2008) suggest that the psychological barrier of low perceived self-efficacy "is likely to be a very important inhibitor of action, arising from structural barriers". Young people who are aware of structural and cultural lock-in to non-sustainability can easily become apathetic, cynical and chronically worried (Ojala 2007), and Wall suggests that, "Both apathy and political powerlessness have been connected to social class and to lack of participation in environmental behaviours (Grabb, 1988; Hays, 1987:269). The socially and economically advantaged have greater access to resources, and more experience with success, which lend to both a greater sense of power and more interest in devoting energy to the issue" (Wall 1994).

Furthermore, because the dominant cultural paradigm is locked-in to non-sustainability, real solutions for sustainability, which are commensurate

with the problems that we face, are largely absent. Small individual actions such as "green consumerism" and recycling provide small opportunities for consumers to help lessen the burden that humanity has placed on this planet, though, in the larger picture, such actions do little to redirect our society from its non-sustainable trajectory of development (Crompton 2008). Recognition of this fact—the impotency of available solutions to global problems of non-sustainability—can reinforce the psychological barrier of low efficacy (Ojala 2007). Thus, many psychological barriers to participatory action have their roots in structural, environmental barriers.

1.6.3 Psychological Adaptations to Non-Sustainability

Research from psychology has also shown that people tend to form coping mechanisms, psychological defense mechanisms and unconscious behavioral justifications in response to seemingly unsolvable global problems (APA 2009). These are unconsciously designed strategies that people use to cope with the negative psychological effects of living in a systemically non-sustainable society. Coping mechanisms are actually adaptations to non-sustainability (Crompton and Kasser 2009). As non-sustainability becomes *normalized*, psychological adaptations can themselves become barriers to action.

Because of these difficult dynamics, psychological barriers are not likely to be overcome until structural barriers are also addressed. This difficult reality prompted us to focus our research on communication for participatory sustainable development, rather than simply "behavior change". Our understanding of participatory sustainable development denotes collective, public-sphere actions *consciously aimed at redirecting society away from non-sustainable lock-in*. Thus, participatory actions are aimed at surmounting environmental barriers to action, and collectively redefining our "culture". Engaging participatory action is more difficult than catalyzing behavior change. However, history has shown us that dedicated citizen actions are highly potent, and have the power to reshape the agendas of both business and government (Knott et al. 2008).

Survey after survey indicates that a large percentage of the public is both informed and concerned about global problems of non-sustainability (EcoAmerica 2008; Leiserowitz et al. 2004). In much of the literature we examined for our research, the authors suggest that there are encouraging signs that a large number of people are ready to tackle global issues in a way that is commensurate with the problems we face (WBCSD 2008; Gleyzes 2007; Kriegman et al. 2006). Communication efforts have simply

failed, thus far, to mobilize the prodigious force of participatory citizen action. It is possible that the presence of institutional barriers and cultural lock-in, as well as the absence of an inspiring "call to arms" from communicators, has thus far dissuaded these naturally sympathetic supporters from participatory actions towards sustainability.

Our research was aimed at identifying the primary, upstream psychological barriers to participatory sustainable development. An "upstream" barrier would be one that, if overcome, would also clear the way for other secondary barriers to be surmounted. After a thorough review of the literature, we identified the barrier of perceived distance from problems of non-sustainability, or *psychological distance*, as a primary, upstream barrier to CPSD. Our thesis is thus focused on communication strategies to overcome this barrier in particular.

1.6.3 The Barrier of Psychological Distance

It is widely recognized that global problems of non-sustainability have an inherently subtle and imperceptible nature (Takács-Sánta 2007; Gleyzes 2007; MEA 2005), and that most people tend to regard them as distant and not of central importance to their lives (APA 2009). This tendency of human perception can be termed *perceived psychological distance* from global problems of non-sustainability. This barrier can be partially attributed to the intrinsic nature of the problems themselves.

Most problems of non-sustainability involve chemical reactions and nutrient cycles that occur on microscopic scales, and also biogeochemical and climatic cycles that operate at the scale of the entire planet. The negative effects of a given action may involve time-delays of decades— even centuries and are likely to manifest far from their place of origin. These complex dynamics, operating at microscopic and gargantuan scales make it likely that people will experience problems of non-sustainability as a psychologically distant phenomenon.

Furthermore, direct experience of global problems of non-sustainability is still relatively rare throughout the world (Weber 2006), and people thus tend to attribute these problems to far-away places, and to people other than themselves (APA 2009). Research has shown that people use past experiences to judge whether or not something is likely to happen (Takács-Sánta 2007). Because people lack direct experience of problems of non-sustainability, they are likely to be perceived as a distant (unlikely) probability. The perceived improbability of these problems is reinforced by

scientific methods of reporting, which emphasize the "uncertainties" involved in climate change and other global problems (Jamieson 2006).

We can thus see that global problems of non-sustainability are perceived as psychologically distant on many levels. As mentioned above, they are often seen as a *distant probability*. Because their individual lives are not directly impacted by these problems, people also tend to feel *socially* distanced as well. They feel *temporal* distance from these problems because many negative effects of non-sustainability are not yet manifest, and may be perceived as pertaining exclusively to future generations. *Spatial* distance relates to the lack of concrete experience, and the unfamiliar scales at which these problems transpire. In our attempts to identify a means to help communication strategists overcome the barrier of perceived psychological distance, we discovered a unified theory of psychological distance, relevant to dimensions of space, time, social distance, and perceived probability.

1.7 Construal Level Theory

Construal Level Theory (CLT) provides "an account of how different dimensions of psychological distance (time, space, social distance, and hypotheticality) affect mental construal and that these construals, in turn, guide prediction, evaluation, and behavior" (Trope, Liberman, Wakslak, 2007). CLT explains that actions, events, objects and experiences that are perceived to be psychologically proximal will be construed, or, mentally represented, in an entirely different way than those that are perceived as psychologically distant. Specifically, CLT research shows that psychologically near phenomena are mentally represented in concrete terms, while those at a high psychological distance will be represented in abstract terms. The abstract mindset, which is evoked in instances of high-perceived psychological distance, is called a *high-level construal*, or a *high construal mindset*. The concrete mindset, which is evoked in instances of low perceived psychological distance, is called a *low-level construal*, or a *low construal mindset*.

After nearly 13 years of research in CLT, the fundamental tenets of the theory are widely regarded as empirically sound (Dhar and Kim 2007). Researchers around the world regard CLT as "a prominent topic for social psychology in general, and for research on judgment and decision making in particular" (Fiedler 2007). Perhaps CLT's single-most significant contribution to social psychology is its identification of perceived psychological distance as a *key* variable in human decision-making. Not

only does perceived psychological distance play an important part in our decision-making process, it has a large effect on the way we understand, represent and interpret our life experience (Liberman et al. 2007b). The theory's founders believe that "psychological distance…may capture a fundamental aspect of meaning and may provide a unifying framework for understanding a wide range of seemingly unrelated social psychological phenomena" (Liberman et al. 2007b).

Because of CLT's focus on questions of perceived psychological distance, we feel that CLT provides a critical perspective for the design of communication strategies that aim to mobilize action in response to psychologically distant problems of non-sustainability. Below, we provide an overview of Construal Level Theory. In chapter 3, we offer specific suggestions as to how CLT can inform the design of communication strategies for participatory sustainable development.

1.7.1 Construal

The Merriam-Webster dictionary defines the word "construal" simply as an "interpretation" (Merriam-Webster). Construal can also be defined as a mental representation, understanding or perceptual construct. The word construal comes from the verb "to construe", which means, "to give the meaning or intention of; explain; interpret" (Dictionary.com). A construal can thus be defined as a subjective mental interpretation that explains or gives meaning to something.

While the concept of construal refers to an inherently subjective representation of the world, it has central importance in everyday objective experience. An example of the importance of construal would be a romantic relationship, which is construed by one person as potentially leading to marriage, while the other person construes it as a casual affair. When this difference in construal is discovered, the entire foundation of the relationship can be jeopardized! We can thus see that a shift in construal can give an entirely new meaning to an experience or event.

1.7.2 The Relationship Between Psychological Distance and Construal

In Construal Level Theory, construal is always considered in relation to perceived psychological distance, or, alternately, varying levels of abstraction. Construal will indicate either *high-level construal* or *low-level construal*. When phenomena are perceived as psychologically distant, they are mentally construed via abstract, high-level construal, or *high construal*

15

mindset. For perceptions of psychological proximity, a concrete, low-level construal, or *low construal mindset* is used.

It is important to remember that the relationship between psychological distance and construal level is a general rule, and acts as something of a default setting in our perception of the world. Because a "construal" is an inherently *subjective* representation of the world, psychologically distant phenomena can be represented via a low-level construal, just as psychologically near phenomena can be represented via a high-level construal. Such instances, however, require conscious volition on the part of the individual, such as self-control, or else some form of external impetus that manipulates perceived psychological distance (Liberman et al. 2007b). Thus, any phenomena can be represented via high-level construal or low-level construal, regardless of its objective distance to the individual.

1.7.3 Psychological Distance and CLT

The earliest research in Construal Level Theory focused on the connection between temporal distance and level of construal. In an article in the *Journal of Personality and Social Psychology*, Nira Liberman and Yaacov Trope presented Temporal Construal Theory, and proposed that levels of mental construal mediate our experience of temporal distance (Liberman and Trope, 1998). Their hypothesis was that the value placed on an event is different in the near future than in a distant time frame. In a series of 5 studies, Liberman and Trope found that "in goal-directed activities, desirability of the activity's end state represents a high-level construal, whereas the feasibility of attaining this end state represents a low-level construal" (Liberman and Trope, 1998). Thus, in near-future decisions, concerns related to *feasibility* predominate while in distant future decisions concerns related to *desirability* will be dominant.

Successive research in Temporal Construal Theory prompted Liberman and Trope to rename their theory Construal Level Theory. Findings from CLT experiments began to suggest that, "it may be useful to conceptualize future and past temporal distance, the various instances of social distance (self vs. other, in-group vs. out-group, and active vs. inactive role), and possibly other distance dimensions (e.g., spatial distance, similarity, and certain vs. uncertain and real vs. hypothetical events) within a unified theory of psychological distance" (Trope and Liberman 2003). This extension of CLT's scope is congruent with other findings in the cognitive sciences, which demonstrate that human beings' conceptualization of *time* is actually understood in terms of physical experience (McGlone & Pfiester 2009).

Specifically, time is understood in terms of *space* (McGlone & Pfiester 2009). Because we understand time in reference to spatial experience, and because dimensions of social distance and relative probability are largely construed in reference to their *spatial proximity* to the observer, the emergence of a unified theory of psychological distance is understandable.

Today, CLT's definition of psychological distance includes four dimensions of distance: temporal, spatial, social and dimensions of perceived probability[2] (Liberman et al., 2007b). Thus, in Construal Level Theory, "psychological distance" specifically refers to perceived distance on any of the four dimensions listed above.

1.7.4 The Construal Level Distinction

Research has shown that high and low construal mind frames are significantly different from one another. Though we move fluidly between high and low construal representations every day, it represents a dramatic shift in perception. Perhaps the primary distinction between high and low construal levels is between abstract and concrete mindsets.

Abstract vs. Concrete. In Construal Level Theory, the terms *abstract mindset* and *concrete mindset* are often used synonymously with high-level construal and low-level construal, respectively. Thus, an abstract mindset is used for psychologically distant representations, while a concrete mindset is used for psychologically near representations. When an event or object is perceived via high-level, or *abstract* construal, its primary, long-lasting and defining features will be most salient. When the same event or object is perceived via low-level, or *concrete* construal, the secondary, transient and surface features predominate (Trope et al., 2007).

The distinction between abstract and concrete levels of representation is not unique to CLT. Substantial research in neurophysiology has shown that the human brain utilizes two distinct systems when abstract versus concrete concepts are activated (Binder et al., 2005). This distinction may even have its roots in the neurological "architecture" of the human brain (Crutch et al., 2005). This distinction is also recognized in cognitive linguistics (Lakoff 2008; Evans and Green 2006), evolutionary psychology (Boyer 1998) and other branches of cognitive science. Appendix 3 briefly explores the overlap between CLT and other disciplines in the cognitive sciences.

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[2] CLT researchers most often use the term "hypotheticality" rather than "perceived probability"(Liberman et al., 2007b). We find the latter term more intuitively clear.

Yaacov Trope, one of CLT's founders, tells us, "one way to distinguish between higher- and lower-level features of an object or event is by asking how much difference it would make if the particular feature was altered or removed. Altering a high-level" (abstract) "feature should produce a more substantial change in the concept in question than altering a low level" (concrete) "feature" (Wakslak et al., 2006). Thus, abstract features can be expected to be more permanent and change less with time, while concrete features will be more transient. Abstract, high construal features are the most essential features, while low construal, concrete features are peripheral and secondary.

1.7.5 Construal Level Variables

The abstract and concrete distinction, however, is only one of many between construal levels. Today, after over a decade of research in CLT, a number of clear demarcations have been drawn between high and low construal-levels, and a number of distinct variables related to each (Wakslak and Trope 2009a). These variables directly correlate with high- and low-level construals, such that, when a high-level construal is activated, high construal variables are most prominent in human perception, and when a low-level construal is activated, low construal variables are made salient. Thus, when an event is perceived as psychologically near, a person will understand his or her actions according to a low construal mindset and low construal variables will be salient. In events of perceived psychological distance, the same action will be construed in terms of a high construal mindset and high construal variables.

The high construal mindset can thus be considered a mindset that, i) is induced in situations of high perceived psychological distance, and ii) a mindset in which high construal variables are salient. Table 1.1 summarizes some of the primary distinctions between high and low construal mindsets. Given that global problems of non-sustainability are experienced at a high psychological distance by most people, we can conclude that the high construal mindset will be most salient when people consider these problems, and that the high construal mindset will form the natural basis for action *in response to these problems*. In Table 1.1, the reader can see some of the specific variables associated with the high construal mindset, and a general picture of the subjective psychological mindset that is naturally prominent with reference to psychologically distant global problems. So as to better understand the construal level distinction, it will be useful for the reader to closely examine Table 1.1 and refer to it throughout this thesis.

Table 1.1. *Construal Level Variables. (See Appendix 2 for a review of the research experiments that led to these distinctions).*

High Construal Variables	Low Construal Variables
High Psychological Distance	Low Psychological Distance
Abstract Representations	Concrete Representations
Simplicity	Complexity
Ends/"Why?"	Means/"How?"
General	Specific
Primary, Core	Secondary, surface
Superordinate	Subordinate
Long-Term Benefit	Short-Term Benefit
Idealistic Self	Pragmatic Self
Out-Group/3rd Person	In-Group/1st Person
Central Values	Peripheral Values
Goal Relevant	Goal Irrelevant
Desirability	Feasibility
Cognitive Response	Affective Response
Increased Altruism	Decreased Altruism
Increased Creativity	Decreased Creativity
Increased Self-Control	Decreased Self-Control
Increased Procrastination	Decreased Procrastination
Increased Life Satisfaction	Decreased Life Satisfaction
Increased Goal Commitment	Decreased Goal Commitment

1.7.6 Priming

Most of the individual variables distinguishing high-level from low-level construal have been isolated in research experiments by the practice of *priming*. Priming can be defined as "the transfer of an activated concept to an unrelated context" (Wakslak and Trope 2009a). The "activated concept" in the experimental setting is quite similar to a communication frame (section 1.4). In CLT research experiments, priming takes the form of intentional manipulation of construal level. Select information is made prominent so as to affect the perception of psychological distance. By manipulating perceived psychological distance, or by making high or low construal variables salient, researchers can determine the effect that these changes have upon mental representation. As with framing, priming can exert a significant effect on judgment, the perception of meaning, attitudes, and behavior (Fujita et al. 2006).

Most definitions of priming specifically point to the importance of "consciously triggering a cognitive cultural model" (Frameworks Institute 2005), or the "activation of social knowledge structures (Bargh 2006). Thus, the cultural schemas referenced in section 1.4 are of great importance to the priming procedure. So as to have the desired effect, the "activated concept" (as well as the communication frame) should be selected with specific reference to the cultural schema of the subjects of the experiment.

1.7.7 Low-Level Construal Perceptual Bias

The everyday life of humans is guided by experiences that are tangible, visual input that is geographically near, and situations that are immediate with regard to temporal and spatial distance. Because our everyday experience involves psychological proximity, we are most likely to revert to a low construal mindset in our everyday actions. Most direct experiences and decision-making will thus generally utilize a low construal mindset, and low construal variables will be most salient.

1.7.8 Low Construal Bias and Rational Self Interest

Examining the variables that distinguish low construal mindset from high construal mindset (Table 1.1) we can see that our everyday, psychologically proximal experiences are guided by considerations of feasibility, short-term benefit, decreased altruism and decreased self-control. These features of the low construal mindset closely approximate the primary assumptions of rational self-interest that constitute the dominant economic model of "economic man".

The origin of the model of economic man is attributed to the work of John Stuart Mill. The primary assumptions of Mill's model are that humans will generally act according to self-interest and a "rational" assessment of the information available to them. Mill regards his efforts as a contribution to *ethology*, which he defines as the science "which determines the kind of character produced in conformity to those general laws (of psychology), by any set of circumstances, physical and moral" (Mill 1843, quoted in Persky 1995). Economists have long recognized that Mill's model is inadequate in describing human behavior (Daly and Cobb Jr. 1989), and hundreds of experimental findings provide evidence in this regard (Leiser et al. 2008). Various attempts have been made to create alternate models—ethologies—of human behavior (Waring 2010) though the basic premise of rational self-interest remains a primary assumption of economic thought.

Joseph Persky contends that, "to compete successfully against economic man, a new ethology must be parsimonious; it must clearly specify the relevant psychological makeup of economic agents; and it must demonstrate that such a system yields better and/or new insights" (Persky 1995). After concluding our research, we feel that Construal Level Theory fulfills the criteria set forth by Persky. While CLT does not constitute a complete economic model of human behavior, it does contribute some valuable insight regarding the determining factors thereof.

In identifying psychological distance as a major factor that *moderates* self-interested behavior, CLT research adds a novel dimension to our understanding of the complexities of human action. Instead of a one-dimensional representation in which human beings are regarded as inherently self-interested, CLT tells us that human beings predominantly act in a self-interested manner because of the *perceptual bias* of the low construal mindset, and the inevitable psychological proximity of our everyday life. Psychological distance may in fact be a key variable determining self-interested vs. altruistic behavior. Thus, the variable of perceived psychological distance may contribute valuable insight to our understanding of dynamics like the "tragedy of the commons" that are major inhibitors to the success of sustainable development.

1.7.9 Subtleties of Construal Level Theory

While the basic relationship between psychological distance and level of construal is very straightforward, we would like to point out a few subtleties that will be important for the reader to bear in mind as we continue. One of the most fundamental distinctions between high and low construal mindsets is that between abstract and concrete concepts. There are many dimensions of abstraction, however, and absolute distinctions between high and low construal levels are not entirely straightforward. For instance, *values* are primarily an abstract, high construal variable. However, CLT makes a distinction between low construal, secondary values and high construal, central values. This is also the case with emotions. Affective responses are primarily low construal variables, though some emotions, such as social and future-relevant emotions, involve a higher psychological distance than basic, self-centered emotions.

The reader should understand the distinction between *objective* and *perceived* psychological distance. The very word "construal" denotes subjectivity—one thing can be construed in a variety of different mind frames. Events that are objectively distant will by default be perceived via a

high construal mind frame, though this default setting can be overruled. People who demonstrate a high level of self-control, or strong personal values—both of which are high construal attributes—are able to construe their everyday life—which objectively exists at a low psychological distance—via high construal mind frame (Trope et al. 2007). This is also exemplified by techniques of visualization and remote viewing, which aim to achieve concrete sensual perceptions of *objectively* distant phenomena.

Also, psychological distance is not the only variable that mediates the switch between high and low construal mindsets. CLT research has shown, "that a widespread tendency to process information in a high-level construal fashion (e.g., a high-level "mindset") can be procedurally primed by engaging in any one procedure associated with this type of processing" (Wakslak and Trope 2009a). Thus, the switch between high and low construal levels is mediated not only by psychological distance, but can be caused by the activation of the variables associated with high or low construal mind frame. The connection between construal level and perceived psychological distance is therefore bidirectional, such that, by priming—or framing—high construal variables, the perception of psychological distance will increase, and vice versa (Liberman et al., 2007b; italics added). Thus, there exists a degree of interchangeability between construal mind frames, variables that are objectively related to construal level and perceived psychological distance.

The realization of some degree of interchangeability between these factors significantly expands the theoretical underpinnings of CLT, and also brings with it a number of questions. First of all, since there are a significant number of variables associated with each level of construal, the question arises as to which factors are more dominant than others. For instance, since technology-based communications often involve a combination of different media, it is conceivable that one dimension of media (image) could emphasize high psychological distance while another (narrative) could emphasize low construal variables. In such an instance, which construal level would predominate? In this regard, it can be noted that visual images—being relatively concrete and more detailed than ideas or words—are generally regarded as low construal variables, while words and language are generally regarded as high construal variables. While we do not explore the implications of this distinction, it may prove very important to the communication strategists.

1.8 Research Questions

The primary research question that guided our thesis was, "How can Construal Level Theory help to address the barrier of perceived psychological distance in the design of communication strategies for participatory sustainable development?"

In support of this primary question we sought to answer the following questions:

1) What common practices in communication theory provide an appropriate means to incorporate CLT into CPSD strategies?

2) What predominant communication strategies are currently used in CPSD?

3) According to the predictions of CLT, how can communication strategies be designed to overcome the barrier of psychological distance?

4) According to CLT, what examples from currently used communication strategies represent both successful and unsuccessful attempts to overcome the barrier of psychological distance?

By answering these four supporting questions, we hoped to be able to provide a satisfactory answer to our primary, overriding research question.

1.9 Scope

This work deals primarily with three subjects: barriers to participatory sustainable development, Construal Level Theory, and communication for participatory sustainable development. We were, of course, unable to do justice to the rich complexities of any of these subjects in a work of this length, though we hope that we have achieved a fluid confluence between these topics. While our research has drawn primarily from the fields of social psychology and communication theory, important sections of our work were also informed by research in other dimensions of cognitive science, namely, cognitive linguistics, evolutionary anthropology and neuroscience. This thesis can be considered a transdisciplinary work, in that

it draws upon many disciplines, though our own academic and professional backgrounds lie outside of the cognitive sciences.

Based upon our research, it appears that our work is the first attempt to apply CLT to the design of a communication strategy for sustainable development. Because this is the seminal work applying CLT in this way, we wish to emphasize the potentially broad range of applications in which CLT might be useful to the communication strategist. The scope we have chosen represents our own agenda, and by no means the theoretical limitations of Construal Level Theory.

Of the literature we reviewed, the majority of the research pertaining to psychological barriers to participatory action was conducted in a Western, developed world context. We have thus sought to limit our focus and the conclusions that we make to a Western, developed world context. Our work acknowledges a two-way interaction between environmental (institutional) barriers to participatory sustainable development and psychological barriers of the same. A dramatic difference in environmental barriers exists between developed and developing world contexts, and so our assumptions regarding psychological barriers might not hold true in the context of the developing world.

Also most of the conclusions we make regarding the design of strategies for CPSD are based on the assumption that problems of non-sustainability exist at a high psychological distance from individuals. While this can be said to be *widely* true (Weber 2006), it may not be the case in countries that have everyday, local problems related to global problems of non-sustainability. In such countries, problems of non-sustainability will be more immediately perceptible, and thus more psychologically proximal. However, given that many of the aforementioned problems could be said to be *inherently* distant in dimensions of time, space, social distance and relative probability, an argument can be made that problems of non-sustainability are inherently psychologically distant, regardless of place.

1.10 Limitations

We would like to emphasize again that none of us has an academic or professional background in the cognitive sciences. Our own lay interest in several branches of cognitive science—and our respect for academically sound research—has guided this report. We dedicated much time to ensuring that all of our conclusions reflect the objective predictions of

Construal Level Theory, and we sincerely welcome any input regarding the strength of our conclusions.

Much of the communication-relevant information upon which we have based our conclusions was gathered with specific reference to climate change, *not* sustainable development. However, since the detrimental effects of climate change largely overlap with the environmental and social issues central to sustainable development (MEA 2005; IPCC 2007) we feel that this data can be justifiably extended to questions of sustainable development. Also, much of the communication literature we reviewed is based on "environmental communication" agendas for "behavior change", or "climate change communication". The aims and scope of much of this literature does not necessarily reflect the level of citizen participation that we aim to achieve through CPSD, though we have attempted to address this shortcoming with our own reasoning capacity.

Finally, we should make it clear that our thesis deals with CLT as a *strategic tool*, in that CLT can help to make a communication strategy more effective with regard to its given agenda. However, the true success of a communication agenda for sustainability will not be judged by whether it succeeds in its agenda, but by whether or not the agenda about which it communicates *actually* leads towards a more sustainable world. It is of no use to successfully mobilize action if the actions promoted do not lead us towards sustainability.

To this end, there is a need for an objective and clearly defined compass to guide action towards sustainability. We would recommend that the goals of any given communication agenda are set according to their ability to achieve sustainability as defined by the 4 Sustainability Principles examined in the previous chapter. The complexities that the sustainability conundrum brings to the table should not be underestimated. Nor should human beings' ability to make costly mistakes. For a precautionary and wise approach to sustainable development, an unwavering science-based guide for action is needed.

2 Methods

Our primary method of research was an extensive review of the literature in cognitive science—primarily social psychology—communication theory and sustainable development. We also consulted with a number of experts, scholars and practitioners along the way, and synthesized their suggestions into our work. Our results, however, are primarily the synthesized findings of other researchers. While CLT's predictions have been continually proven in an experimental setting, to our knowledge, they have yet to be applied to the design of communication strategies of any kind, and in our thesis we did not test CLT's predictions in a real-life communication scenario.

Our attempt to apply Construal Level Theory to the design of communication strategies for participatory sustainable development assumed four phases of research. The first phase of our work consisted of examining commonly used practices and strategies in current communication agendas. This was necessary to identify the best methods by which CLT could be used as a strategic tool by the communication professional. After extensive review of the literature in communication theory, we identified *framing* as the communication practice that would be most useful in this regard. This was decided because of the similarities between framing in communication theory and the *priming* practices used in CLT research[3].

In the second phase of our research, we examined predominant framing practices relevant to sustainable development[4]. We then examined these predominant communication frames through the lens of CLT, seeking specific predictions that CLT would make as to their probable effectiveness. The conclusions that we have drawn in applying CLT to framing strategies are largely based upon the assumption that global problems of non-sustainability exist at a high psychological distance from the target audience of a given communication agenda.

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[3] While "priming" is acknowledged as a technique in communication theory, framing and priming are implemented by manipulating information salience. Because framing is more widely recognized as a relevant communication technique, we chose the latter as the appropriate means by which to apply CLT to communication strategies.

[4] Predominant communication frames were identified primarily through the work of Nerlich et al. (2010), Segnit and Ereaut (2007) and Gleyzes (2007).

The third phase of our work consisted of identifying specific framing practices for which CLT would predict success. Because CLT clearly predicts that communication frames emphasizing high construal variables will be most successful in communicating psychologically distant global problems, this stage of our work essentially consisted of designing communication frames in which high construal variables are made salient. We also examined *existing* communication frames that would be successful based on CLT's predictions.

After examining the objective predictions that result from applying CLT to strategic CPSD practices, we next sought to contextualize these predictions within the independent findings of communication professionals and general practitioners in the field of sustainable development. By comparing CLT's findings—which emerge from a controlled experimental environment—with the "real world" findings of professionals and practitioners in communication for sustainable development, we sought to gain additional (indirect) evidence regarding CLT's predictions.

Our results are structured into three layers. First, we attempt to clearly show the objective predictions that Construal Level Theory would make regarding the design of communication frames for CPSD. Second, we identify antecedent communication efforts that closely approximate the framing practices that might result when the objective predictions of CLT are followed. Third, we compare the predictions of CLT with other research in social psychology, as well as the independent findings of communication strategists.

Where our conclusions are based upon data, we have sought to verify its validity through cross-referencing. In consulting the literary voices of experts or practitioners, we have sought to identify the most reliable and objective sources. Where our conclusions are based upon assumptions, or what we feel to be commonly held axioms, we have made ourselves explicitly clear.

3 Results

The current chapter seeks to apply CLT to the design of communication strategies for participatory sustainable development. First, we examine what predictions CLT would make regarding the design of successful communication frames for mobilizing participatory action in response to psychologically distant problems of non-sustainability. We offer a model of the primary communication strategies available when applying CLT to strategic communication practices. Next, we examine current communication practices through the lens of CLT, and what predictions CLT would make as to their chances for success. We then explore specific communication frames that result when CLT is used as a strategic guide in the design of communication strategies aimed at overcoming the barrier of psychological distance.

In the previous chapter we showed how priming, or "the transfer of an activated concept to an unrelated context" (Wakslak and Trope 2009a) was the method by which researchers created the desired experimental conditions for CLT research. Notice that the definition of priming given above closely parallels the definition of "framing" provided in section 1.4, where "Framing is the setting of an issue within an appropriate context to achieve a desired interpretation or perspective" (Shome and Marx 2009). Since the priming procedure used in CLT research closely parallels framing practices in communication theory, we can assume that "framing" a communication by manipulating information salience will have much the same effect as "priming" an experiment by manipulating information salience. We can thus conclude that framing is an appropriate technique by which communicators can incorporate the findings from CLT research in the design of communication strategies for participatory sustainable development. For this paper, we will use the term "high construal frame" to denote a communication in which variables associated with a high-level construal are made salient, and "low construal frame" to denote a communication in which low construal variables are made salient.

3.1 Construal Pathways of Communication

For the communicator utilizing CLT, there exist four possible communication scenarios. These four options are illustrated in Figure 3.1 (page 30). The thick lines between the *perceived psychological distance* column and the *communication frame* column represent the default "fit" between perceived psychological distance and level of construal. We shall

28

call these the *dominant* pathways to action. Because people are naturally primed to act based upon this natural "fit", the dominant pathways to action are more easily mobilized. The dashed lines do not provide a "fit" between psychological distance and construal level. These we shall call the *subordinate* pathways to action. Because a "construal" is a subjective representation of the world, high construal variables *can* be made salient in instances of low perceived psychological distance, and vice versa. However, communication efforts appealing to the subordinate pathways to action are at an immediate disadvantage. In attempting to mobilize the subordinate pathways to action, communication strategists are likely to confront mental inertia from a default perceptual bias that has evolved over many thousands of years (Appendices 1 & 3). Furthermore, because of the bi-directional link between construal mindset and psychological distance, actions will be taken based upon—and represented according to—the *subjective* construal mindset that has been activated, regardless of objective distance. This justifies the existence of only two pathways to action.

For a majority of people, direct, concrete, everyday experience regarding global problems of non-sustainability is still rare (Weber 2006). We can therefore expect that these problems will be experienced at a high psychological distance, and, thus, that a high construal mindset is generally used to represent these problems. Indeed, even in countries where direct, everyday experience includes the negative effects of global problems, the long time scales, minute—and gigantic—spatial scales and highly complex bio-geo-chemical cycles involved in these problems make them inherently subtle and imperceptible. People are thus naturally primed to respond to these global problems via high construal representations. This high construal pathway to action is represented by pathway B-1 in Figure 3.1.

Due to the predominance of the low construal pathway to action, and due also to the inherently subtle nature of global problems of non-sustainability, communicators are at an immediate disadvantage in trying to mobilize participatory action for sustainable development. Predominant communication repertoires have attempted to override peoples' tendency to perceive global problems of non-sustainability as psychologically distant. By accentuating the threatening, visceral and eminent dimensions of global problems of non-sustainability, or, alternately, by attempting to accommodate participatory action into mundane, consumer-based routines, these strategies strive to create an experience of psychological proximity. In the language of CLT, such strategies force a low construal communication frame on an issue that is inherently perceived as psychologically distant. This communication strategy is represented by pathway B-2 in Figure 3.1.

Perceived Psychological Distance	Communication Frame	Action

B
High Distance

1 High Construal → High Construal Pathway to Action

2 Low Construal

A
Low Distance

1 Low Construal → Low Construal Pathway to Action

2 High Construal

Communication Pathways
Dominant path
Subordinate path
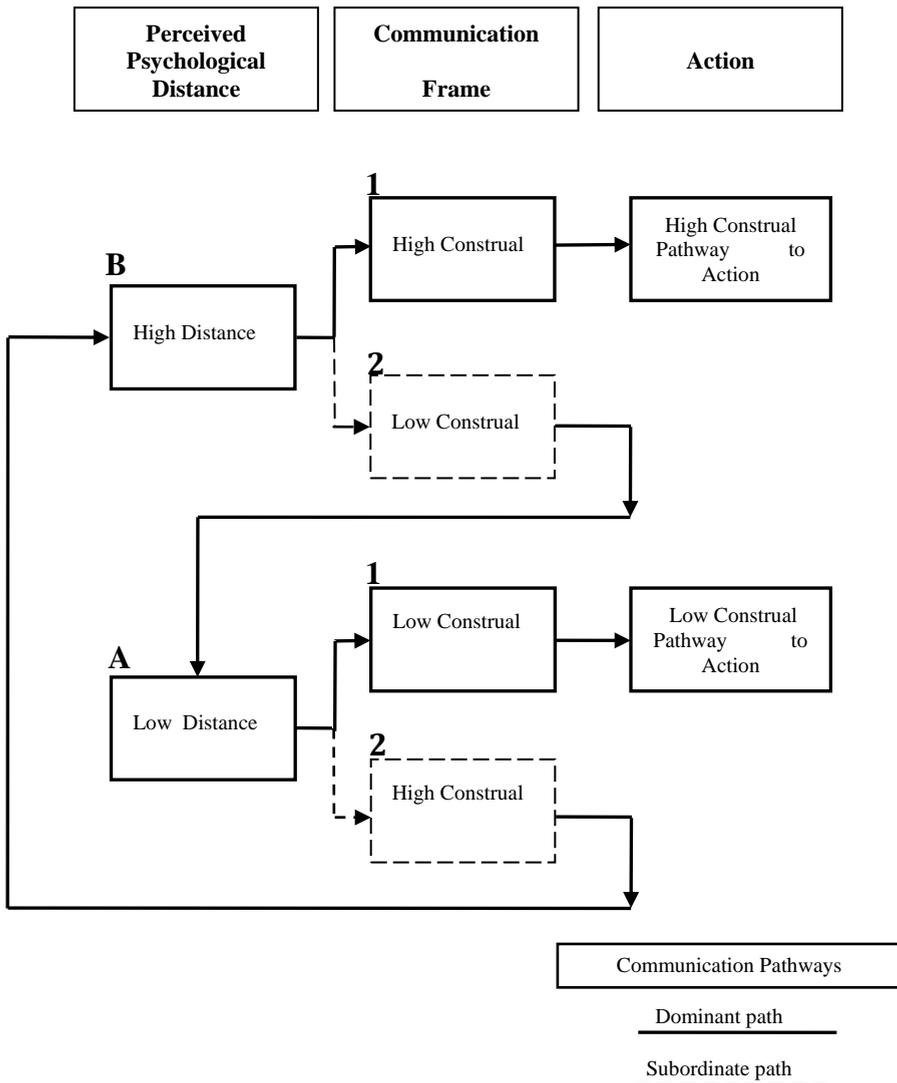
Figure 3.1 *The authors' model of the 4 communication pathways by which to mobilize action. Based on Construal Level Theory.*

What would Construal Level Theory tell us regarding the probable results of this communication strategy? First, we must remember that the aim of CPSD is to mobilize action. CLT research shows that, when an experiment is primed such that a "fit" exists between perceived distance and level of construal, a *majority* of people will be most likely to act. As an example, let's say that 100 people are in a room. A researcher/communicator has primed the situation, creating a scenario in which high psychological distance is perceived *with regard to a given action*. CLT would predict that,

in order to mobilize a majority of the 100 persons to act, the action should be framed such that high construal variables are made salient. This basic prediction has held true again and again in CLT research experiments (Liberman et al. 2007 b).

Given that global problems of non-sustainability are generally experienced as psychologically distant, CLT predicts that a high construal communication frame will be most successful in mobilizing action *in response to these problems*. According to CLT, communicators attempting to catalyze participatory actions towards sustainability should try to achieve maximum resonance with the high construal mindset, which is naturally salient in instances of perceived psychological distance. This basic prediction stems from the research in CLT that shows that a majority of experiment participants will respond favorably when a "fit" is achieved between conditions of psychological distance and the corresponding mental construal. When CLT is applied in the design of communication strategies for CPSD, it appears that the objective predictions of CLT have been independently confirmed by the trial and error of many communication strategists in the field of sustainable development. Because of the congruence of CLT's findings with the independent findings of communication strategists, and because of the consistency of the experimental findings in CLT research, we suspect that CLT's predictions will hold true when applied to real-life communication (framing) practices.

The notion that preference should be given to high construal communication strategies is immediately difficult, even counter-intuitive. After all, *action*, of the everyday kind, is empirically linked to the low construal mind frame, while the high construal mindset is associated with increased tendency towards procrastination (McCrea et al. 2008). Also, seeing as that the link between construal level and perceived psychological distance is bi-directional (Wakslak and Trope 2009a), framing communications via high-level construal frames could actually *increase* the perceived psychological distance of global problems.

We will remind the reader that it was the near-unanimous appeal by communicators to *overcome* perceived psychological distance to global problems of non-sustainability that led us to select Construal Level Theory as our topic for this thesis. At the onset of our research, we fully expected to identify tools that would help the communicator to create a sense of psychological proximity regarding global problems. However, our research indicates that psychological distance is largely due to the inherent nature of global problems, and that peoples' everyday experiences—or, rather, *lack*

of direct experiences—are likely to reinforce the barrier of psychological distance from global problems. Perceived psychological distance may therefore be an *inherent condition* with which the communication strategist must contend.

Because global problems of non-sustainability *are* relevant to our everyday actions—even though they are not perceived as such—a case could be made that these problems *actually* exist at a low psychological distance, and should be communicated as such (communication pathway A-1 or B-2, figure 3.1). However, our research indicates that, while these problems are immediately relevant to people, they nonetheless are generally *construed* as psychologically distant, and the high construal mindset will therefore be the natural basis for action *in response* to global problems of non-sustainability. This scenario—low objective distance/high construal mindset—is represented by pathway A-2 in Figure 3.1. Given that mental construal is an inherently subjective feature, CLT would predict that a high construal communication frame should be utilized in attempting to mobilize actions that are perceived as being psychologically distant, regardless of the objective distance in question.

3.2 Low Construal Frames & Predominant Repertoires

Ereaut and Segnit conducted a thorough study of communication repertoires in the climate change discourse across a wide range of sources (Segnit and Ereaut 2007). The authors identified "alarmism" and "small actions" as the dominant repertoires in communication campaigns for climate change. The predominance of these repertoires in current communication strategies has been recognized elsewhere (Nerlich et al. 2010; Gleyzes 2007; Crompton 2008). As we shall see, both the alarmist and small action communication frames can be regarded as low construal communication frames. This communication strategy is represented by communication pathway B-2 in Figure 3.1, in which a low construal communication frame is used in instances of high psychological distance.

3.2.1 The Alarmist Frame

Alarmist frames are distinguished by their attempt to induce the perception of risk in the listener. Risk perception has a number of different dimensions (for a thorough review, see Roser-Renouf & Nisbet, 2008). However, alarm does not inspire actions unless the audience is *worried* about the problem being communicated (Weber 2006). We can thus say that communication

efforts that use the alarmist frame, *and* wish to inspire action, attempt to induce the feeling of worry in the listener. This type of risk perception is termed *affective responses* (Roser-Renouf and Nisbet 2008). CLT researchers tell us that affective response—in particular basic, highly personal emotional reactions like fear, anger, pain, etc.—corresponds with a low construal mind frame (Liberman et al., 2007b).

Seymour Epstein's cognitive-experiential self-theory, explores the differences in the *experiential*, or, emotional, system and the cognitive, or, rational, system (Epstein 1994). After nearly two decades of research in cognitive-experiential self-theory, "a large and important body of research indicates the experiential" (emotional) "mode of thinking *is designed to facilitate action in the present*. It did not evolve to enable us to cope with the distant future. We might expect, therefore, that it would be difficult to process in a consistent manner the affect associated with *outcomes that occur repeatedly over time, change slowly over time, or are remote in time*" (Slovic et al., 2002, italics added). If it is taken for granted that the italicized portion of the preceding quotation closely describes problems of psychological distance associated with global problems of non-sustainability, we can see that the experiential—emotional—mind is not adapted to guide decisions with regard to these problems. The popular alarmist frame is therefore attempting to undermine a basic human representational bias. In attempting this uphill battle, the alarmist frame, to some extent, may be destined for failure.

One of the earliest research experiments in CLT showed that, in instances of perceived psychological distance, actions are taken primarily based on considerations of the action's *desirability* (Liberman and Trope 1998). The research has shown that the "pros", or, arguments in favor of a given course of action, are more persuasive in instances of high psychological distance than are the "cons", or, arguments against a given course of action (Eyal et al. 2004). We can therefore say that the high construal mindset has a general bias towards *positively defined* actions, or a "gain frame" communication strategy. Since the alarmist frame uses a "loss frame" and accentuates the negative actual and potential effects of global problems of non-sustainability, it appeals to a low construal mindset, and is thus a subordinate pathway to action in instances of high psychological distance.

While affective responses in general are related to the low construal mind frame, psychologically near emotions such as fear, anger, pain and hunger are relatively *more* low construal than psychologically distant social or future-relevant emotions (Appendix 2). Utilizing an alarmist frame is likely

to reinforce survivalist, self-preserving emotions, which are basic, low construal emotions (Liberman et al. 2007b), and will thus fail to provide the desired "fit" when communicating psychologically distant global problems. The failures of the alarmist frame are also widely recognized by communication strategists. A UNEP report titled *Communicating Sustainability* notes that, "Human fight or flight instincts are not programmed to respond to vague, uncertain threats such as climate change. Indeed, linking sustainable development issues to our survival is likely to simply make people afraid, and hence apathetic" (Shea and Montillaud-Joyel 2005). A recent report by Columbia University's Center for Research on Environmental Decisions noted that alarmist communication strategies "may backfire…causing negative consequences that often prove quite difficult to reverse" (Shome and Marx 2009), and a number of studies from social psychology have shown that "threats have been found to evoke strong feelings of fear and just as much, or even more, defensive reactions than behavioral change" (Ojala 2007). The alarmist frame may thus make people feel *defensive* about their current, unsustainable behavior rather than driven to change!

That being said, much of the information related to global problems of non-sustainability can be said to be *inherently* alarming. It would probably not be strategically wise to suggest that communicators should *shelter* the public from all alarming information related to these problems. Renouf and Nisbet (2008) have identified a number of dimensions of risk perception. The above discussion has dealt with the affective response dimension of risk perception, which an alarmist frame generally seeks to engage (Weber 2006). There are also *cognitive* (non-emotional) dimensions of risk, as well as *personal* vs. *social* risk. CLT tells us that, due to their relatively high psychological distance from the self, social and/or future-relevant emotions are more closely associated with a high construal mindset than basic, self-preserving emotions. We can thus say that, if an alarmist frame is used, it will be most effective if it emphasizes social and/or future-relevant (rather than immediate) emotions, and social (rather than individual) risk. This is confirmed by the work of Bord and colleagues (2000), who found that "perceptions of risk *as a societal threat* significantly predicted behavioral intentions…while *personal risk* perceptions did not" (Roser-Renouf and Nisbet 2008). Because CLT researchers have found that a high construal mind frame corresponds to cognitive, rather than affective considerations, making the cognitive and social dimensions (Renouf and Nisbet 2008) of risk perception salient will more closely provide the desired "fit" between perceived distance and level of construal.

3.2.2 The Consumer Action Frame

Excessive consumption is a primary cause of global problems of non-sustainability[5]. Given the difficult dynamics of lock-in to non-sustainability, even if the majority of consumers followed the "best practices" of sustainable consumption, problems related to non-sustainable production and distribution would continue, and true sustainability would not be attained (Thogersen and Crompton 2009). Mobilizing citizens' self-enhancing, materialistic values may therefore be strategically ill advised with reference to the over-arching goals of sustainable development.

3.2.3 Green Consumerism Frame and Small-and-Painless Frame

Sustainable consumption can be divided into three subcategories: "consuming differently", "consuming responsibly" and "consuming less" (Jackson 2005). Each of these action frames relates to different consumer activities, each requiring a different degree of personal commitment on the part of the consumer. Dominant efforts to promote sustainable consumption emphasize the "consume differently", or "green consumerism" frame (Jackson and Michaelis 2003). This frame requires the least personal commitment, and also entails the propagation of consumerism, which, at its current scale, is a major hindrance to sustainable development. Crompton (2008) identifies the "small and painless" actions frame as a dominant communication repertoire. By design, the small and painless action frame entails only minimal adjustments to one's consumer habits and daily routines. Of both the "small and painless" and "green consumerism" communication frames, we can say that private-sphere actions requiring minimal personal commitment are emphasized. The dominant repertoires within communications for sustainable consumption thus tend to emphasize the least ambitious—and the least effective—solutions.

Construal Level Theory tells us that all varieties of consumer activities could potentially be construed at a high or low construal level. Small actions that might have little overall effect on the global situation of cultural lock-in can be construed as high construal activities. Likewise, more environmentally significant activities, such as insulating one's house, can be construed as an entirely pragmatic, low construal affair. The high construal mindset is associated with a person's *idealistic self* (section 3.3.2)

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[5] While problems related to consumption are clearly directly related to the population explosion, this does not detract from the fact that excessive, or *conspicuous*, consumption is a widespread problem in much of the developed world.

while the low construal mindset is associated with their *pragmatic self*. The "pragmatic self is characterized as an action oriented mental representation that is primarily guided by practical concerns" (Kivetz and Tyler 2006). The "self as consumer" is likely to represent a pragmatic, low construal, conceptualization of the self. While it has been shown that consumption can take on symbolic meaning, and can be driven by a desire to achieve social status and even sexual dominance (Jackson 2005), we would suggest that most peoples' consumer habits are not likely to be defining qualities of their true sense of identity. If the "consumer self" relates to the low construal mind frame, communications which address the citizen primarily as a consumer will not mobilize the high construal, idealistic self (section 3.3.2) and will thus fail to provide the desired "fit" between communication frame and global problems of high psychological distance.

3.2.4 Feasibility Considerations and Consumer Actions

The high construal mindset is associated with estimates of low probability. Because the high construal mindset is prominent regarding problems of non-sustainability, it is likely that these problems are automatically perceived as *less likely* to be surmounted. This dynamic is reflected in the large body of research on perceived self-efficacy (Oskamp 2000; Roser-Renouf and Nisbet 2008). When a low construal mind frame is activated, *feasibility* considerations will be salient (Liberman and Trope 1998). Since the "consume differently" and "small and painless" communication frames emphasize the feasibility and effortlessness of solutions, we can say that they emphasize low construal variables in attempting to address an inherently high construal (high perceived distance) issue. If a low construal mindset *gives extra importance to considerations of feasibility*, and low feasibility (low probability) is automatically associated with problems of non-sustainability, a low construal communication frame is likely to make citizens more conscious of the inefficacy of their actions in response to global problems.

Even though the high construal mindset is associated with low perceived probability, actions taken from a high construal mind frame give less importance to probability considerations and more to considerations of desirability (Liberman et al., 2007b). Numerous experiments in CLT have shown that, when a high construal mind frame is activated, the difficulty of tasks is perceived as less important (Agerström and Björklund 2009; Liberman and Trope 1998). In fact, people actually show a preference for "hard but interesting" tasks when a high construal mind frame is active (Liberman et al., 2007b). The inherent difficulty of addressing global

problems of non-sustainability may therefore not be as much of a consideration for citizens, if the solutions to these problems are presented via high construal communication frames that emphasize the interesting, desirable aspects of a given action. Such a communication frame would succeed in providing the "fit" between psychological distance, construal level and communication frame for which CLT would predict success.

We will remind the reader that our thesis is particularly concerned with the promotion of collective, public-sphere citizen actions towards sustainability. In our review of the literature, we found ample recognition that the "small-and-painless" and "green consumerism" frames are unlikely to lead to deeply committed, public-sphere activism (Keller and Speth 2009; MacKay 2009; Crompton 2008). It is widely recognized that activist, public-sphere actions require deeper levels of personal commitment than private-sphere, consumer activities (Stern 2000; Gleyzes 2007). Most researchers suggest that people who are committed to participatory sustainable development at this level are committed at the level of values (Keller and Speth 2009; Crompton 2008). CLT research has shown that people's values, as well as deeper levels of personal commitment to one's actions, are related to the high construal mind frame. Therefore, low construal communication frames such as the small-and-painless actions and consume differently frames appear unlikely to activate deeply committed, values-based actions.

3.2.5 The "Foot-in-the-Door" Assumption

Current communication strategies for engaging public action towards sustainability have become increasingly reliant on the "foot-in-the-door" assumption (Thogersen and Crompton 2009). This assumption expects that engaging consumers in one small action will increase their willingness to adopt more ambitious actions in the future (Thogersen and Crompton 2009). The foot-in-the-door assumption appears to be largely based on Self-perception theory (Crompton 2008). Self-perception theory (Bem 1972) tells us that, "people's attitudes are formed from the perception of their own previous behavior" (Cornelissen et al. 2008). The theory predicts that by *watching themselves* act in a pro-environmental manner, people will presumably be more likely to regard themselves as environmentally concerned, and thus more likely to act that way again.

The validity of foot-in-the-door assumption is highly contested (Thogersen and Crompton 2009). Crompton argues that, "if the initial request (e.g. to install energy-efficient light-bulbs) is framed in a way that does not draw

attention to its environmental benefit, then this will do little to contribute to an individual's sense that they are 'the type of person who cares for the environment'" (Crompton 2008). CLT research has shown that, when the low construal mindset is activated, low construal variables are salient, and a person will construe his or her actions according to their pragmatic and self-oriented concerns. Thus, even if low construal, consumer-action frames are *nominally* linked to global problems, actions taken in response to these frames will be subjectively understood according to a person's self-oriented, pragmatic concerns—not concerns for global problems.

When actions are taken from the low construal mindset, people feel less committed to their actions, and are more likely to abandon one action in favor of another (Fischbach et al. 2006). Indeed, CLT tells us that it is the *high construal* mindset that is associated with deeper commitment to action (Dhar and Kim 2007), willingness to endure hardship (Angerström and Bjorklund 2009) and diminished concern for the difficulty of actions (Liberman and Trope 1998). These are certainly the types of qualities that the foot-in-the-door strategy would hope to activate. By mobilizing peoples' high construal mindset in consumer-based communication strategies, it will likely be easier to introduce more difficult actions requiring greater personal sacrifice and deeper levels of commitment. CLT research gives us no reason to suspect, however, that a low construal communication frame will inspire these qualities. All research in CLT that we reviewed appears to suggest that high construal communication frames will be most successful in accomplishing the intended aims of the foot-in-the-door strategy.

The Rebound Effect. It should also be noted that any measurement of the success of the foot-in-the-door strategy will have to take the "rebound effect" into account. This is a dynamic by which one pro-environmental action provides the psychological justification for another "indulgence" in anti-environmental behavior. Because the foot-in-the-door strategy is reliant on mobilizing consumer-relevant values, it can be assumed that the same demographic that responds to foot-in-the-door tactics is also the demographic that is likely to be most susceptible to the rebound effect.

3.2.6 Summary

A UNEP report titled *Sustainability Communications: Addressing Climate Change* suggests that the alarmist and consumer action frames represent two extreme perspectives of the *scale* of global problems of non-sustainability (Gleyzes 2007). On the one hand, the alarmist frame attempts

to exaggerate the issue of scale, to make problems appear *immediately* threatening, and, in the most extreme cases, to emphasize the scale of environmental degradation to the point that problems seem almost insurmountable. On the other hand, the consumer action frame attempts to ignore the issue of scale, suggesting that a few small adjustments in the private-sphere behavior of consumers will lead us towards sustainability. Both of these approaches represent an attempt to override the natural relationship between construal and psychological distance. As a result, CLT would not predict optimal success for these strategies.

However, the consumer actions frame can show tangible pathways of actions and ways of creating new, more sustainable habits, and the alarmist frame often contains critically important information about the very real, and potentially eminent, negative consequences of global problems of non-sustainability. We do not interpret CLT's predictions to mean that all alarming and consumer-relevant information should be excluded from strategies for CPSD. Our discussion is relevant to the communication *frame* that is created by making certain information more salient than other. Important considerations regarding consumer actions and alarming realities can and should be included in CPSD strategies. It may not be strategic, however, if these considerations are the focus of the communication frame.

3.3 High Construal Communication Frames

This section is of particular interest to the communication strategist, since it represents the types of communication frames for which Construal Level Theory would predict success in attempting to mobilize action in response to psychologically distant global problems. We offer examples of existing communication strategies that are likely to resonate with the high construal mindset. The research of Rabinovich et. al. (2009) suggests that, in order to maximize goal-relevant behavior, a concrete, pragmatic (low construal) goal *in combination with* a high construal mindset may provide optimum results in attempting to inspire participatory actions. This strategy, shown by pathway A-2 in Figure 3.1, can be seen as "Think global, act local", and represents a highly desirable consciousness for participatory sustainable development[6]. A high construal mindset can be activated both in instances of high (pathways B-1 and A-2) and low psychological distance, and the following discussion is equally relevant to either of these scenarios.

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[6] This pathway is reminiscent of the Precautionary Principle, whereby pragmatic, everyday actions are construed in terms of their long-term effects (high temporal distance) and their possible effects on others in far-away places (high social and spatial distance).

3.3.1 Values-Based Frame

A report from Harvard University's Center for International Development (CID) states that, "Values define or direct us to goals, frame our attitudes, and…are also relatively abstract and transsituational" (Leiserowitz et al. 2004), where "transsituational" indicates that values are not likely to change across situations. This definition clearly shows that values are a high construal variable, since the latter change less with time (Cozzolino et al. 2009), always "emphasize what is central and defining" (Wakslak and Trope 2009a) and are associated with features of relatively high abstraction. Values are generally a high construal variable, though CLT researchers also distinguish *another* level of abstraction, between central, core values on the one hand and peripheral, secondary values on the other (Liberman et al. 2007b). These correspond to high and low construal levels respectively.

Research in CLT has shown that values predict behavioral intention more accurately in psychologically distant situations than in proximal situations (Eya et al. 2009; Kivetz and Tyler 2007). Thus, the condition of high psychological distance engages a person's values as the basis for action and decision-making. Since perceived psychological distance may be the uncompromising initial conditions with regard to mobilizing participatory action towards sustainability, peoples' values—particularly their central, high construal values—are likely to act as primary guides for action in response to psychologically distant problems of non-sustainability.

Societal values, and "shared" (widely held) values are associated with a relatively high social distance from the individual, and are thus considered high construal values (Trope & Liberman 2003). CLT would thus predict that high construal, abstract, and widely held (Leiserowitz et al., 2004) values, such as equality, solidarity, tolerance, freedom, respect for nature and democracy will be most resonant with the majority of people in instances of high psychological distance. Such values can form the context within which communication strategists present the topic of sustainable development to the public. This approach is reflected in the work of Robert McDonald, who, following the lead of Amartya Sen, suggests that we should conceive of, "sustainable development as *freedom* (italics added) …from poverty, from want, from insecurity, from repression…Utilizing this language makes clear that sustainable development is about *people*, those alive today and those that will live in the future" (McDonald 2006).

Schwartz's distinction between values of *self-enhancement* and *self-transcendence* (Crompton & Kasser 2009) is also likely to correspond to

low and high construal values respectively. This is due to the fact that self-enhancing values are closely linked to personal, self-interested concerns (low social distance), while self-transcendent values correspond to altruism and the consideration of the perspective of others (Kellert & Speth J. 2009), both of which relate to the high construal mindset (Agerström and Björklund 2009; Nan 2007). Schwartz's classification also corresponds closely to the aforementioned distinction between the low construal, pragmatic self and the high construal, idealistic self.

Schultz and colleagues conducted a cross-cultural study which showed that self-transcendent, high construal values were significant positive predictors of having engaged in a set of twelve environmentally-helpful behaviors—from recycling and picking up litter to public sphere activism (Schultz et al. 2005). While the "foot-in-the-door" strategy would start by mobilizing small consumer actions in hope of activating a wider spectrum of behaviors, Schultz's study suggests that, when a person's values are mobilized, a full spectrum of environmentally significant behaviors is activated. Because of the positive correlation between high construal values and private *and* public-sphere actions, and also given CLT's prediction that people are inherently primed to act in accordance with their values in response to global problems, a values-based, high construal communication frame should be most strategic in mobilizing all types of participatory action for sustainable development. A *reverse* foot-in-the-door strategy—whereby communication frames *first* seek to mobilize deeply-committed, values-based actions—may therefore be most effective in catalyzing both pragmatic, low-difficulty actions as well as public-sphere activism.

However, CLT's prediction that high construal values will act as a guide for behavior in psychologically distant situations may only hold true for those people who are predisposed towards high construal, self-transcendent values. Cozzolino et. al. (2009) found that, for individuals who were primarily disposed towards the pursuit of extrinsic, self-enhancing goals, a *limited* time perspective—low psychological distance—reinforced high construal[7]. The authors suggest that this dynamic is exemplified by the adage that, as death draws near (limited time perspective) those who have pursued self-enhancing goals their entire lives become regretful, and may turn away from self-enhancing goals (Cozzolino et al. 2009). This research suggests that communication strategies based on high construal values may

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[7] While the research of Cozzolino et. al. focused on the intrinsic/extrinsic classification of values, Kasser (in Kellert & Speth 2009) has shown a high degree of correlation between this classification and Schwartz's self-enhancing/self-transcendent classification.

only be successful if a sufficient percentage of people in the target audience are predisposed towards transcendent, rather than self-enhancing values.

3.3.2 Idealistic Self Frame

We have seen that the low construal pathway is the dominant basis for everyday actions, and that the low construal mindset corresponds to a person's pragmatic self (section 3.2.3). CLT research suggests that, even though people might act predominantly with regard to their pragmatic self-interest, this does not necessarily represent their perception of their "true identity", or their *idealistic self*. Based on CLT's predictions, the founders of the theory predicted that people are likely to "feel that their self-identity would be expressed in the distant future but not in the near-future. Ironically…people may end up rarely, in fact, revealing their true self" (Trope and Liberman 2003).

This prediction was confirmed in the experimental research of Kivetz and Tyler concerning the idealistic versus pragmatic selves (Kivetz and Tyler 2006). The researchers define the *idealistic self* as "a mental representation that places principles and values above practical considerations and seeks to express the person's sense of true self" (Kivetz and Tyler 2006). Even though peoples' pragmatic self is the primary guide for everyday actions, the idealistic self does provide the basis for significant actions of participatory citizenship. In examining the motives for peoples' voting patterns in the U.S., George Lakoff notes, "People do not necessarily vote in their self-interest. They vote their identity. They vote their values. They vote for who they identify with" (Lakoff 2004). Values comprise one dimension of peoples' representation of their idealistic self. Mobilizing this psychologically distant self for participatory actions may prove highly important for the ultimate success of sustainable development.

3.3.3 Idealistic Self as Altruist

Altruism, and altruistic motivation, forms a central aspect of most social psychological models of environmentally significant behavior (Berenguer 2010). It has been defined as the performance of acts "that intentionally benefit another organism, incur no direct personal benefit and sometimes bear a personal cost" (Tankersley et al. 2007). A great deal of research has examined the contributing factors to altruistic behavior, with different models suggesting empathy, perceived responsibility, moral reasoning, personal norms and/or values as important moderators of altruistic behavior (Berenguer 2010). Research in CLT has shown that psychological distance

is an important moderator of altruistic behavior. Activating a high construal mindset increases peoples' awareness of the altruistic dimensions of their actions, and increases the likelihood that altruistic motivation will drive action (Agerström and Björklund 2009). The high construal mindset is also associated with adopting the perspective of others (Nan 2007).

In a recent article in the *Journal of Personality and Social Psychology*, Griskevicius, Tybur and Van den Bergh demonstrate that altruistic, pro-environmental actions may be closely linked to peoples' motivation to achieve social status (Griskevicius et al., 2010). Following research in costly signaling theory, the authors suggest that altruism and other "costly" pro-social behaviors can act as *communicative signals*, which demonstrate a person's ability to incur costs, adopt social responsibility and self-sacrifice. From the perspective of CLT, these "social signals" associated with altruism reflect a high construal representation of the self. This is because they are *socially* distant representations, being relative to a person's place *within* society, and involving the consideration of the perspective of others. Thus, CLT would predict that framing participatory sustainable development as an aspect of an individual's altruistic, *social* self would activate a high construal mindset, and provide the desired "fit" between perceived psychological distance, construal mindset and communication frame.

3.3.4 Idealistic Self and the Well-Being Frame

Most definitions of sustainability and sustainable development follow the historic Brundtland commission report, and emphasize human "needs" (WCED 1987). While the discussion of human needs is very difficult, and a variety of definitions exist, framing sustainable development according to *needs* may correspond to a low construal communication frame. The word "need" may be inseparable from the understanding of "neediness", or being "in need". If the notion of "need" is inextricably linked to thoughts of "being without" something, it may activate low construal, self-enhancing emotions. Furthermore, we have seen that the high construal mindset has an inherent bias towards the desirability of actions, and *positively defined* conceptualizations in general. If "needs" are inherently connected to notions of *being without* something, we can say that framing sustainable development according to needs will fail to resonate with the high construal mindset.

Framing sustainability in terms of positively defined notions such as "well-being", or "quality of life" may more poignantly emphasize the *desirability*

of sustainability, and may thus be more likely to appeal to the high construal mindset and the idealistic self. CLT research tells us that an abstract, high construal mindset is associated with increased happiness and subjective well-being (Updegraff and Suh 2007), increased creativity (Shapira and Liberman 2009), and increased sense of personal meaning (Liberman et al., 2007b). In research experiments, it has been found that "the activation of abstract high-level construals resulted in decreased preferences for immediate over delayed outcomes…stronger behavioral intentions to exercise self-control, and more negative evaluations of tempting stimuli and behavior" (Agerström and Björklund 2009). These dimensions of contentment, restraint and self-control are usually associated with increased personal well-being. The high construal mindset may thus be naturally receptive to communications that emphasize well-being.

Stutz suggests that "well-being" can be considered a human value (Stutz 2006). After reviewing a swath of empirical survey data, Stutz states that there is a general worldwide consensus that well-being and quality of life are, and should continue to be, central, core human values (Stutz 2006). Since core, widely held values represent high construal values, we can say that communication frames emphasizing well-being and quality of life are likely to appeal to high construal values. Stutz goes on to outline a vision in which promoting societal well-being can form an important aspect of a successful global transition towards a sustainable world.

Other attempts to frame sustainable development in terms of well-being can be found in the recent work of Andrews and Urbanska, who suggest that promoting simple lifestyles can provide the basis for new notions of "quality of life" (WWI 2010). CLT research tells us that a high construal mindset is associated with a simplified conceptualization of the self (Liberman et al., 2007b). The promotion of simple lifestyles may therefore be naturally appealing to the high construal mindset. de Graaf (2010) offers a similar communication strategy, suggesting that the promotion of a shorter work day could be a strategic platform in helping to transition away from a consumer-based society (WWI 2010). Since freeing-up the required hours of the workweek may play a central role in a transition towards a sustainable macroeconomic system (Daly 2010), these communication frames may reinforce the over-arching goals of sustainable development.

3.3.5 Spiritual Dimensions of the Idealistic Self

Many aspects of our species' attempt to transition towards sustainability bring important questions to bear about the spiritual heritage of humankind.

From the inception of the industrial age, the Western world has steadily grown away from its religious heritage, and science has largely usurped the role of our society's cosmological guide. This shift in worldview has steered our species away from superstitious beliefs, helped to free the public sphere from the political influence of the church, and helped us to abandon outdated religio-cultural axioms. However, it has been accompanied by several negative consequences as well.

Excessive, conspicuous consumerism, which is a major barrier to sustainable development, can be driven in part by a sense of spiritual deprivation, and the personal pursuit of transcendent meaning (Jackson 2005). Also, decreased satisfaction with life and an increase in psychological disorders tend to accompany materialistic values (Kasser and Kanner 2004). Numerous efforts have attempted to recapture some of the positive spiritual dimensions of our society that were lost in our unbridled enthusiasm for growth, prosperity and industrialism. In the final chapter of their book *For the Common Good*, Daly and Cobb Jr. outline many aspects of a spiritual worldview that would benefit a global transition towards sustainability (Daly & Cobb Jr. 1989). The Earth Charter identifies basic values and principles for a sustainable world (The Earth Charter Commission 2000), and offers something of a "doctrine" for sustainability.

Burrus and Roese (2006) discovered that when the high construal mindset is activated, people are more likely to attribute an event to *fate*, or, "the force or power held to predetermine events" (Burrus and Roese 2006). This research suggests that peoples' beliefs in a transcendent, spiritual force are likely to be high construal representations.

Research in Construal Level Theory has also shown that, when people take action based on the high construal mindset, they prefer to describe their actions in terms of their high-level, rather than mundane, motives (Fujita et al., 2006). The high construal mindset is also associated with the "why", or meaning-relevant dimensions of actions (Liberman et al., 2007b). Actions taken from the high construal mindset are also "related to the primary goals of the actions, rather than in terms of incidental, goal-irrelevant features" (Trope and Liberman 2003). Because the high construal mindset is naturally resonant with the "meaning" and "primary goal" of our actions, communicating sustainable development within the context of larger, transcendent goals, and linking it to a deeper sense of meaning and purpose may prove successful in enlisting citizen actions towards sustainability.

Thus, in order to achieve a "fit" between communication frame and construal level, sustainable development can be communicated via a transcendent frame, attempting to explore the spiritual implications and deeper sense of meaning behind our species' transition towards sustainability. We find an interesting example of this framing strategy in the work Sachs and Finkelpearl (2010), regarding the work of Joseph Campbell and the "monomyth" he calls "The Hero's Journey" (WWI 2010). After years of cross-cultural research in mythology, Campbell identified The Hero's Journey as a common mythological theme in cultures across the world. Sachs and Finkelpearl posit that, "What is of particular interest to social marketers about Campbell's theories is that the setting for these adventures is often a broken world in need of healing…stories of a societal shift from consumerism to sustainability fit perfectly into humanity's pre-formed ideas of what a hero's journey is all about. A hero is someone who helps to heal society's ills" (WWI 2010). Because Campbell's monomyth has been identified in cultures around the world (Campbell 1949), it may represent a universally understood template within which sustainable development can be contextualized.

3.3.6 Idealistic Self and Participatory Citizenship

"Societal frames" emphasizing the "self as citizen" involve a relatively high perception of psychological distance, and can thus be regarded as high construal communication frames (Nan 2007). Many scholars, practitioners and strategists regard the promotion of new, participatory paradigms of citizenship as a critical goal of sustainable development (Raskin et al., 2002; Crompton 2008; Dobson 2007). This is reflected in the substantial body of work dedicated to promoting and understanding "ecological" or "environmental" citizenship[8]. Andrew Dobson states that, "environmental citizenship involves the recognition that self-interested behaviour will not always protect or sustain public goods such as the environment", and he contends, "environmental responsibilities follow from environmental rights as a matter of natural justice" (Dobson 2007). Dobson suggests that environmental citizenship should be promoted within the context of widely held social values like justice, human rights and responsibility to society.

Dobson's work is one example in which the "self as participatory citizen" frame can be combined with the high construal, abstract values frame. The work of Kriegman et al. (2006) provides another example of this sort. The

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[8] For a thorough review, see the journal *Environmental Politics*, Vol. 14, No. 2, April 2005.

authors posit that *cosmopolitan identity*, or "the emergence of a global identity", represents a new form of citizenship that would greatly benefit the ultimate success of a global transition towards sustainability. Global citizens are said to "share the broad values and principles that would underlie a transition to a just and sustainable planetary society, such as human rights, freedom, democracy, pluralism, and environmental protection" (Kriegman et al., 2006). Of course, any notion of a "global identity" would represent a very high psychological distance from the physical self, and would thus resonate with the high construal mindset

The examples outlined above demonstrate how communication strategists can promote new, participatory forms of citizenship within the context of other high construal variables, such as peoples' abstract, timeless values. The "self as participatory citizen" is an inherently high construal conceptualization of the self. By combining this frame with other high construal frames, such as the "self as altruist" and/or "spiritual dimensions" frame, appeals can be made to peoples' idealistic, social self, emphasizing their ability to act as a catalyst for positive change in their society.

3.3.7 Social Movements and Collective Action Frames

In the 2010 State of the World report, titled *Transforming Cultures: From Consumerism to Sustainability*, Erik Assadourian suggests, "For sustainable societies to take root quickly in the decades to come, the power of social movements will need to be fully tapped" (WWI 2010). This understanding is reflected in the work of numerous scholars and sustainability practitioners, including Mooney (2004), Raskin (2008), Kriegman (2006) and the wider "political ecology" and "alternative development" movements (Rocheleau 2007).

Leiserowitz, Kates and Parris (2004) suggest that the American Civil Rights movement was not galvanized until televised images showed "overt racism, which offended widely held values of justice, fairness, and equality" (Leiserowitz et al., 2004). Thus, when peoples' widely held, social (high construal) values were violated, they were mobilized for participation in the Civil Rights movement. Targeting the high construal mindset in communication strategies may thus enhance peoples' willingness to join social movements towards sustainability.

In *A Primer on Social Movements*, Snow and Soule tell us that people are much more willing to participate in social movements if they feel that the movement provides a "collective identity" (Snow & Soule 2010). Any

notions of collective identity and collective action are likely to appeal primarily to peoples' high construal, *self-in-society* mindset. Snow and Soule also tell us that the sense of personal and/or collective efficacy regarding the eventual success of the movement is another key factor determining movement participation. We have seen that, when the high construal mindset is procedurally primed, people are less dissuaded by low perceived efficacy, and even show a preference for "hard but interesting" tasks (Liberman et al., 2007 b).

A great deal of scholarship has been done regarding the role of framing in social movements (Benford and Snow 2000). The literature refers to "collective action frames" and "frame transformation", by which new, shared meaning is created among social movement constituents (Benford and Snow 2000; Snow and Soule 2010). The effectiveness of collective action frames is another important factor determining the success of social movements (Snow and Soule 2010), and the creation of collective action frames corresponds to the role of the communicator in sustainable development. Communicators become "signifying agents actively engaged in the production and maintenance of meaning for constituents, antagonists, and bystanders or observers" (Benford and Snow 2000).

While the creation of collective action frames for social movements is in many ways the most powerful expression of communication efforts for participatory sustainable development, the process is inherently "contentious in the sense that it involves the generation of interpretive frames that not only differ from existing ones but that may also challenge them" (Benford and Snow 2000). Thus, the "new meaning" that results from the creation of collective action frames is different from the *currently shared* meaning of our society, which is locked-in to non-sustainability. This awareness is reflected in the report from the 2004 UN Roundtable on Communication for Development, where we read, "*One of the fundamental hindrances to the decision to adopt the participation strategy is that it threatens existing hierarchies*" (FAO 2005, italics added).

We can thus identify an underlying reason why communication strategists have largely abandoned participatory approaches: such approaches immediately point to the need to challenge deeply embedded power structures within our society. While it is understandable why most communication strategists have avoided contentious collective action framing practices, the tensions underlying social movements may be a natural dimension of sustainable development. Mooney views "these tensions as functional to sustainability by creating an "institutional friction"

that facilitates innovation, flexibility and long-term adaptability" (Mooney 2004). From this perspective, social movements can be seen as the natural process of *cultural innovation* discussed earlier (section 1.2.1).

In fact, social movements are probably an *inevitable* part of sustainable development, and it is in the interest of all of humanity that these movements be orchestrated according to an intentional, peaceful, empowering, and participatory agenda. Global problems of non-sustainability are accompanied by stresses upon ecosystems and the life-sustaining services and resources they provide (MEA 2005). These stresses endanger the livelihoods of many people, and can become so great that they can cause social upheaval, widespread migration and violence (Barnett and Adger 2007). The humanitarian crisis and genocide in Darfur, which has claimed the lives of over 200,000 and created over 2,000,000 refugees was largely rooted in climate change (Ban Ki-Moon 2007). As global population is expected to increase to 9 billion people by 2050 (WBCSD 2008), and the strains that global problems of non-sustainability place upon humanity grow worse, contentious and tragic social upheavals are likely to become more commonplace.

CLT predicts that, as problems of non-sustainability grow psychologically near, people will revert to their low construal mindset in response to these problems. The low construal mindset corresponds to decreased self-control (Fujita et al., 2006), decreased altruistic and moral behavior (Agerström and Björklund 2009), and inability to manage common resources in a sustainable manner (Liberman et al., 2007b). All of these variables, we can say, would increase the likelihood that a social movement would become violent and uncontrollable. On the other hand, high-construal variables such as societal values (Trope and Liberman 2003), increased focus on long-term goals (Fujita et al., 2006), increased self-control (Fujita et al., 2006), enhanced morality and altruism (Agerström and Björklund 2009), and enhanced creativity (Shapira and Liberman 2009) would all help to *avert* violence. Thus, if a social movement is formed under high construal pretexts, it is much more likely to remain peaceful and cooperative than if it is sparked by low-construal concerns.

Social movements have played a central role in humanity's evolution towards a just and democratic world, and they will likely play an important part in our transition towards sustainability. By helping to orchestrate strategic and enlightened social movements, communication strategists may even help to advert violent upheavals that may result if no response is made to the challenges confronting our species.

3.3.8 Cold Frame

We have seen that the alarmist, emotionally charged communication frame corresponds to the low construal mindset. Research in CLT has shown that psychological increases the prominence of cold, cognitive judgement, rather than hot, emotional judgement (Liberman et al., 2007b). A high construal mindset is thus associated with emotionally neutral, cognitive reasoning. We shall call abstract, cognitive and emotionally neutral communications frames "cold frame" communications.

CLT predicts that high construal, cold frame communications will be more successful than the "hot frame" alarmist approach in circumstances of high psychological distance. This would suggest that the scientific language is at an advantage in communicating global problems of non-sustainability, since the high construal mindset corresponds to abstract conceptualizations, and a mature scientific understanding of the world is generally regarded as an abstract understanding[9] (Amin 2009).

Here we encounter a dimension of the high construal mindset that presents a contradiction to communication strategists. While the high construal mindset corresponds to an objective, cold frame, it also corresponds to the "why", or the *meaning* of an event, as well as the spiritual dimensions of peoples' idealistic self. Science is generally regarded as incapable of imparting the meaning-relevant and spiritual dimensions of reality. In fact, because framing entails the intentional manipulation of information salience and, with few exceptions, science strives for objective reporting of facts, the very idea of "framing" a communication is largely foreign to science. For our purposes, we can simply say that, in order to achieve the optimum "fit" between a communication frame and the high construal mindset, a hybrid between the cold frame and meaning-relevant frame may be designed, attempting to achieve resonance with both the cognitive, cold dimensions of the high construal mindset as well as the need for a deeper, underlying sense of meaning.

We find an example of such a communication strategy in the work of Tucker and Swimme (in Kellert & Speth 2009). The authors propose a communication framework that they call "the universe story", and they suggest that, "the integrated story of the origin and development of the universe, of Earth, and of humans could become an inspiring vision for our

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[9] A science-based understanding relates to a simplified and principles-based understanding of the world, rather than a naive view of complex and seemingly disjointed phenomena.

time" (Kellert & Speth 2009). The authors relate their work to an evolving trend in science, which they identify as "having three intersecting phases: understanding the story of the universe with the best scientific methods, integrating the story as a whole (cosmic, Earth, human), and reflecting on the story with a sense of our responsibility for its continuity" (Kellert & Speth 2009). Communicating the scientific aspects of sustainable development through this three-phase approach may resonate with both the cognitive and meaning-relevant dimensions of the high construal mindset.

The use of metaphoric language can also help the communication strategist convey scientific knowledge while emphasizing its meaning-relevant dimensions. Research in conceptual metaphor theory has repeatedly shown that metaphor is a primary means by which humans interpret meaning (Lakoff 2008). Through the use of metaphor, communicators can describe one concept—usually a more difficult or perhaps alienating concept—*in terms of* another, more familiar concept. The more familiar, or less alienating concept becomes the *source* for the understanding of the other concept. In this process, however, the *meaning* from the source concept is also transferred to the secondary concept.

Mitchell and Saren (2008) suggest that, "By using the generative and creative power of metaphors we attempt to draw the sustainability debate away from the language of the mechanistic world; where matter is regarded as inert, mute, passive and exploitable" (Mitchell & Saren 2008). Communication strategists may be able to communicate the cold, objective dimensions of scientific knowledge using a more meaning-relevant metaphor as the source of meaning. Source metaphors can be selected so as to resonate with the high construal mindset, and also to impart dimensions of meaning that are important to the goals of sustainable development. The use of metaphor has even been shown to help people gain a clearer understanding of difficult scientific concepts (Amin 2009).

3.3.9 Cognitive Empathy Frame

The literature in social psychology draws a distinction between *cognitive* empathy, which entails indirect, mental representation, and *affective* empathy, which entails direct perception of the object of empathy (Nava 2007). Cognitive empathy is thus reliant on mental *representation* while affective empathy entails psychologically near experience. While affective responses are generally low construal variables, cognitive empathy is regarded as a high construal form of empathy (Liberman et al., 2007b). CLT would thus predict that, in instances of high psychological distance,

appeals to cognitive empathy will be more effective than appeals to affective empathy (Liberman, Tope and Stephan 2007).

Berenguer (2010) has shown that a person's perceived psychological distance from the object of empathy has important implications for the *type* of empathy expressed. Specifically, it was shown that a more psychologically distant object—a bird—generated *ecocentric* environmental concern, or, concern based on the intrinsic value of nature, while a psychologically proximal object—a human—generated *anthropocentric* concern for nature, or, concern based on nature's *utility* to human beings (Berenguer 2010). The activation of the high construal mindset, through psychologically distant objects of cognitive empathy, may therefore help people to develop an appreciation for the intrinsic value of the natural world upon which we depend for our survival. The Millenium Ecosystem Assessment states that "Sound ecosystem management", a necessary prerequisite for the achievement of sustainability, will require "processes that allow considerations of the intrinsic value of ecosystems to be factored into decision-making" (MEA 2005).

3.3.10 Systems Perspective Frame

Activation of the abstract, high construal mindset can help people to create connections between seemingly unrelated concepts (Liberman and Shapira, 2009). This ability is a key component of *systems thinking*, which has been defined as "a science…for understanding patterns and relations of complex problems…and relations between seemingly isolated things" (Robèrt et al., 2004). Systems thinking is likely to utilize the high construal mindset, since it often entails the increasing of perceived psychological distance, by adopting an "overview" perspective of a system, and contemplating interconnections between distant dimensions of a system. Systems thinking also involves gaining a coherent and simplified perspective on things that might appear dauntingly complex. Research in CLT has shown that complex and difficult tasks can be simplified by procedurally priming a high construal mindset (Liberman et al., 2007b).

Senge et. al state that, "Making sense of complex issues like sustainability requires systems-thinking skills that are not widely shared" (Senge et al., 2007). This is mainly true because human society is one *system* that is intimately connected to numerous other systems, such as ecosystems, climatic cycles, and, ultimately, the "mega" system of Earth. If systems thinking is highly desirable in attempting to solve global problems of non-sustainability, *and* it entails the activation of an abstract, high construal

mindset, strategically designed high construal communication frames may enhance peoples' ability to make sense of complex global problems.

Glaser (2006) states that, "factors such as uncertainty, non-linear feedback, cross-scale interactions…cause complexity in social and ecological systems" (Glaser 2006). A systems perspective attempts to make this complexity manageable to the human mind through abstract thinking and adoption of a multi-perspective approach to thinking. As Glaser points out, one of the major considerations in systems thinking is the problem of *cross-scale interactions*, and the MEA acknowledges that, "a full assessment of the interactions between people and ecosystems requires a multiscale approach" (MEA 2005). The multi-scale nature of the Earth system pertains to varying spatial scales as well as varying scales of time. Different dynamics are present at different scales, and yet they interact as an emergent whole. Because Construal Level Theory explicitly addresses varying scales of temporal and spatial distance, we feel that it might provide an intriguing platform upon which to create communication strategies that take into account the important considerations of multi-scale systemic dynamics. While we cannot suggest what such a communication strategy would look like, by including these considerations in the design of CPSD strategies, a more subtle and refined approach may be achievable.

3.3.11 Evolutionary Frame

Evolutionary time scales are immense, and thus represent an *increase* of the perception of psychological distance. An evolutionary perspective is likely to make the high construal mindset salient. Thus, communicating global problems from an evolutinary perspective should provide a "fit" between perceived distance and level of construal. The link between construal level and psychological distance is bi-directional through time, such that long-term *historical* perspectives will have the same effect as long-term future perspectives (Liberman et al., 2007b). The work of Robert Costanza and the *Integrated History and future Of People on Earth* (IHOPE) project provides an example of an historic, evolutionary perspective of the challenges presented by sustainable development.

The integration of the systems perspective frame with the evolutionary frame is found in the work of many practitioners in sustainable development. In their seminal work *Great Transition: The Promise and Lure of the Times Ahead*, Raskin et al. examine "the historic roots, current dynamics and future perils of world development" (Raskin et al., 2002) from an evolutionary time perspective, and note that the dynamics of

transformation present in our species' move towards sustainability are "ubiquitous in nature. As physical or biological systems develop they tend to evolve gradually within a given state or organization, then enter a period of transformation that is often chaotic and turbulent, and finally emerge in a new state with qualitatively different features" (Raskin et al., 2002). By identifying evolutionary dynamics in other "systems" that reflect the difficult transition that our species is forced to make, the authors contextualize sustainable development within a larger "story" of evolution that is found throughout the universe.

If people viewed the difficult realities confronting our species as a natural process found throughout nature, they may be less prone to experience the psychological barriers of inefficacy and despair, which are major inhibitors of participatory action. They may even be more willing to accept dramatic changes in policy and laws—which will doubtlessly be necessary if we are to attain sustainability—as a natural dimension of the evolutionary process of our society. Framing communications for participatory sustainable development in an evolutionary frame may therefore be a strategic way to enhance future optimism, and therefore increase perceived efficacy (Ojala 2007). Research in CLT has shown that the high construal mindset, which serves as the natural basis for action in response to global problems of non-sustainability, is associated with enhanced positivity and future optimism (Liberman & Trope 1998).

The notion of "evolution" is often associated with advancement, improvement and refinement, and may thus be more intriguing to the average citizen than notions of "development". However, an evolutionary perspective also provides the ultimate communication frame based upon *cognitive risk* (section 3.2.1). The "story" of evolution is rife with evolutionary failures—species, which, for one reason or another, became extinct. The end of our civilization, and even the potential extinction of the human species, is a real consequence of non-sustainability that must be considered. Antal and Hukkinen (2010) claim that their "analysis provides cognitive grounds for a major revision of climate change communication…with a clearly focused message on saving our civilization" (Antal and Hukkinen 2010). If framed from a high construal and non-alarmist perspective, messages to "save our civilization" could create an underlying sense of purpose, appeal to peoples' goal-related nature, their social, idealistic self, and also provide an abstract, systems-based perspective. It therefore appears that the evolutionary frame can address the inherently alarming realities confronting our species from a cold, high construal, and emotionally neutral communication frame.

3.4 General Discussion

Our thesis appears to be the first application of Construal Level Theory to communication strategies for engaging participatory citizen actions towards sustainability. Recent works by Agerstrom and Bjorklund (2009), Rabinovich, et. al. (2009), and an as-yet unpublished paper by Lee Ahern (Penn State University) have begun to examine CLT's relevance to global problems of non-sustainability. Also of interest in this regard is the research of Fujita et al. (2006), Kivetz and Tyler (2006), Freitas et. al. (2008), Wilson et al. (2009), and Wakslak and Trope (2009 a & b).

After nearly 13 years of research in Construal Level Theory, it is widely regarded as one of the most influential social psychological theories in decades. Given that the barrier of perceived psychological distance is a major barrier to participatory citizen actions, and given that this barrier is the primary focus of CLT research, we believe that, in the years to come, CLT's findings will play an important part in communication strategies for sustainable development.

Humans' perception of psychological distance is nothing new; it is a natural representational bias, which has evolved over thousands of years. This subjective dimension of our experience has evolved in consort with our experience of the natural world, and is reinforced again and again by our everyday experience. Our research indicates that global problems of non-sustainability are psychologically distant in large part because of the nature of the problems themselves, and that they are likely to be continually perceived as being psychologically distant—until, at least, the full-blown consequences of non-sustainability emerge on a larger scale. Telling people that problems of non-sustainability are immanent, urgent and dangerous contradicts the everyday messages they receive from their sensory perceptions. If communicators continually repeat the message of psychological proximity, and peoples' direct experience continually proves it wrong, this communication strategy may eventually undermine the trust of the target audience. Rather than attempting to override the primary cognitive features of the human mind, it may be more strategic to meet the problems where they stand, acknowledging that, *by their very nature* global problems are perceived as psychologically distant. This simple point should be neither avoided nor overemphasized in strategies for CPSD.

Although attempting to mobilize action in psychologically distant circumstances is inherently difficult, the high construal mindset is the natural basis for action *in response to global problems*. While

communication frames designed to resonate with the low construal mindset mobilize a more common pathway to action, *they do not mobilize action in response to psychologically distant global problems*. Instead, they mobilize action based on peoples' pragmatic, self-interested concerns. Low construal communication frames may thus fail to validate the subjective psychological experience of individuals who may be inherently predisposed towards deeply committed, values-based actions. While many communication strategists suggest that it should not matter to the communicator *why* citizens take action, we would suggest that, for the longer-term considerations of sustainable development, it may be important that the subjective understanding of citizens is aligned with the objective dimensions of the problems to which they respond. In this way, citizens will be psychologically prepared to engage in what is likely to be a long and difficult transition towards a sustainable world.

Furthermore, attempting to decrease psychological distance regarding global problems is of little use unless clear pathways to action exist that are commensurate to the scale of the global problems we face. The realities of lock-in to non-sustainability will require dramatic solutions if they are to be overcome. If a sense of urgency *is* evoked, citizens will seek out pathways to action that genuinely address the problems being communicated. By offering simplistic pathways to action such as recycling, green consumerism and small adjustments to peoples' everyday routines, communication strategists may be forgetting the countless historical instances in which public-sphere, participatory actions by everyday citizens have reshaped our species' social and cultural realities for the better.

CLT's prediction that a high construal communication frame will be most strategic in addressing the barrier of psychological distance is difficult for many reasons. It has become a widely held axiom in communication efforts for sustainability that perceived psychological distance should be *reduced*, and psychological proximity *achieved*. Communications aimed to resonate with the high construal mindset will not decrease, but may even *increase* the perception of psychological distance from global problems. Also, it is no secret to communication strategists that mobilizing participatory action at the level of values and altruism—both high construal constructs—is inherently difficult, and is likely to take much more time than agendas that seek to mobilize actions based on peoples' pragmatic, low construal self.

CLT tells us that when a given level of construal is activated, all of the attributes and variables that are associated with that construal mindset will be more salient than those associated with the alternate mind frame. When

a high construal mindset is activated, citizens are more likely to undertake actions at the level of their values, and with much greater resolve, increased creativity, and greater self-fulfillment. The high construal mindset has also been related to enhanced future optimism (Liberman & Trope 1998), ability to manage common resources in an equitable manner (Liberman et al., 2007b), and also an increase in peoples' ability to develop an extended future time perspective (Trope and Liberman 2003). We would suggest that these and many other qualities associated with the high construal mindset are precisely the types of qualities that our species must *enhance* in order to create a sustainable world. Therefore, the high construal communication approach may be strategic, a) in that it provides a "fit" between perceived psychological distance and level of construal, and, b) because the overarching goals of sustainable development would be supported by the types of human traits that are associated with the high construal mindset.

The high construal communication strategy is also highly strategic because, once actions are taken from the high construal mindset, they will be taken from a deeper level of commitment than actions based on a low construal mindset. High construal communication frames therefore have an intriguing potential to create "change-agents" for sustainability, who themselves may begin to engage in the same types of advocacy efforts as the communication strategist. This type of small-scale advocacy communication can be extremely potent, since it transpires at an intimate, conversation-based scale. This could potentially create a snowball effect, whereby naturally sympathetic citizens are mobilized to action by having their subjective psychological concerns *legitimized* by other citizens.

Indeed, in our research we found a number of clear indications suggesting that a significant percentage of people are concerned about problems of non-sustainability. Perhaps a significant factor explaining their hitherto complacent behavior is that the communication frames *through which* they have been receiving information have failed to resonate with their subjective psychological experience of global problems of non-sustainability. Also, because commensurate solutions to global problems are largely absent, we can also assume that a number of people are hindered by the perceived inefficacy of current solutions. Whatever the case, there is no way to know how many people could potentially be mobilized to action if communications for participatory sustainable development are *specifically* designed to resonate with the high construal mindset. Based on our research, we feel certain that, if CLT's predictions are applied in real-life communication scenarios, they are likely to yield superior results than currently predominant communication strategies.

3.5 Applying CLT to the FSSD

Since the utilization of the FSSD very often entails *communicating* the problem of non-sustainability, and since these problems are inherently predisposed to being construed as psychologically distant, CLT should hold an important place in the toolkit of sustainability practitioners working with the FSSD. The overview provided in the previous section can act as a general guide for communicating in any context. Below, we offer some specific insights that CLT lends to the procedures relevant to the FSSD.

The backcasting methodology and the ABCD process can be regarded as inherently high construal procedures. This is true for several reasons: First, backcasting is conducted with reference to the 4 Sustainability Principles (4SPs). Research in CLT tells us that psychologically distant situations are "perceived in terms of high-level principles" (Liberman et al. 2007b). Also, high construal variables are defining and more permanent. Given that the 4SPs are principles-based guides for action and represent features that will not change with time, we can say that they represent high construal variables. Second, the backcasting process involves the perception of a distant future state in which sustainability has been achieved. Since high-perceived distance automatically makes the high construal mindset salient, we can say that backcasting will resonate with the high construal mindset. Finally, the backcasting process involves goal-relevant behavior, which has been shown to be associated with the high construal mindset. In these regards, CLT would predict that the backcasting process would provide the desired "fit" between perceived psychological distance, level of construal and communication frame.

The emphasis that the FSSD places on attaining consensus at the level of 'trunk and branches' rather than the concrete, 'foliage' level is consistent with the predictions of CLT. If we take it for granted that global problems of non-sustainability are perceived as psychologically distant, CLT would predict that consensus at this shared, abstract level provides an optimum basis for collective action towards sustainability.

In the "D-step" of the ABCD process, specific actions are selected that can strategically lead towards sustainability. Ideally, these actions should engage a high construal mindset, for, even though "D"-step actions are taken with reference to pragmatic and feasible (low construal) considerations, the actions are broadly framed in terms of the overarching, psychologically distant goal of sustainability. Everyday actions that are enacted via high construal mindset are represented by the A-2 pathway to

action in Figure 3.1. The "D-step" of the ABCD process is likely to coincide with this pathway, though CLT would not necessarily predict an optimum "fit" on these grounds alone.

We have shown that actions that are framed exclusively according to scientific principles are not likely to *optimally* engage the high construal mindset. Even though the high construal mindset is associated with science-based, cognitive reasoning, CLT tells us that high construal courses of action are taken with regard to the *desirability* of those actions. The high construal mindset is also relevant to the underlying *meaning* of actions, rather than their pragmatic, "how" dimensions. The "vision" of a sustainable society suggested by the backcasting process is usually defined in scientific terms, and may not be sufficiently desirable to optimally engage the high construal mindset. The scientific perspective is also largely incapable of connecting our actions to a deeper sense of meaning.

Furthermore, the vision of a sustainable society utilized in the backcasting process is defined in negative terms, in that it entails *not* transgressing the limitations of the 4SPs. Because the high construal mindset has an inherent bias towards positively defined courses of action—the "pros" associated with an action—defining a future sustainable society strictly in terms of not violating the 4SPs will fail to provide an optimum "fit" for the high construal mindset that is predisposed to take action in response to problems of non-sustainability. In order to achieve maximum participatory engagement, we suggest that practitioners using the FSSD should consider utilizing a positively defined vision of a sustainable society.

We understand that the 4SPs are defined in negative terms so as to establish the boundaries within which a sustainable society must operate. We also understand that utilizing the 4SPs as a guide to action is superior to using positively defined scenarios, since the latter are most useful when a static picture of the future can be foreseen, which is not the case in sustainable development. However, because high psychological distance includes estimates of low probability, it is likely that people are predisposed to view a successful transition towards sustainability as unlikely. This tendency breeds feelings of personal and collective inefficacy, and an unwillingness to act. In order to inspire the high construal mindset to overcome the sense of low probability that accompanies solutions for sustainability, a highly *desirable*, and intriguing vision of a sustainable society should be sought out. The science-based, negatively defined vision of a sustainable society currently utilized in the backcasting process may not be sufficiently intriguing to mobilize the high construal mindset into action.

In order to reach a solution that does not compromise the scientifically robust foundation upon which the FSSD is based, we would suggest that practitioners working with the FSSD examine the work of the Global Scenario Group (GSG). Using rigorous scientific methodology, the GSG has compiled a series of 6 global scenarios, which have been relied on in the development of several international scenario assessments. The scientific and positively defined vision of a sustainable society used in the GSG publications can help to provide a "magnetic" dimension to the backcasting approach, drawing participants into a highly desirable vision of a sustainable society.

Scenarios can also be created in participatory processes, whereby a group *collectively* defines a future sustainable society. A number of sustainability practitioners regard participatory scenario development as an extremely powerful way to mobilize participatory action towards sustainability. Given that the scenario making process used by the GSG is based on understanding the way in which complex interactions between society, economy nature and policy are likely to interact *over time*, the scenarios could provide an interactive pedagogical platform upon which to help participants understand the complex dynamics at work in problems of sustainable development. In this way, the notion of a "sustainable society" could be captured under one emergent picture that is flexible, plausible, and more likely to capture the high construal, meaning-relevant dimensions of sustainable development than a science-based definition alone.

When presenting the larger system, context and meaning in the "A-step" of the A-B-C-D process, a perspective that *increases* perceived psychological distance will be most likely to optimally engage the high construal mindset. We would suggest that, when conducting the "A-step" of the ABCD process—and also in the (System) level of the FSSD—practitioners should begin from the perspective of an evolutionary time scale. By framing the backcasting process within an evolutionary perspective, the high construal mindset will become optimally primed for action. The "context and meaning" that is created in the "A-step" is thus more likely to activate high construal variables, which are associated with an increased willingness to engage in psychologically distant courses of action. Given that the ABCD process—and the global problems that is seeks to address—are inherently associated with high psychological distance, an evolutionary perspective will provide the optimum cognitive "fit" for actions towards sustainability. Robèrt et al. (2004) provide guidance in this regard (Chapter 5).

Finally, we suggest that the "funnel metaphor" may have *inherently* alarmist dimensions. Based upon our research in CLT, we would suggest that *any* attempt to induce risk perception should be made within the context of a larger "story of meaning" (Robèrt 2002). Contextualizing the sustainability challenge within a meaning-relevant communication frame may help to avert feelings of inefficacy and despair that can accompany awareness of the sustainability challenge. While no single story of meaning can exist for humankind, they can be collectively defined in participatory processes—akin to defining the "core purpose" of a sustainable society.

3.6 Conclusion

Our research was aimed at increasing communication strategists' understanding of the barrier of perceived distance from global problems, in an effort to overcome this barrier and increase citizen action towards sustainability. CLT is indispensible in this effort, and it should hold an important place in the toolkit of communication strategists working on behalf of the goals of sustainable development. As research continues, our understanding of this barrier will increase, as will our capacity to address it with increased precision. Given that our thesis is the first effort in applying CLT to the design of communication strategies for sustainable development, we hope that it forms the initial venture into a domain of research that will be widely explored in the years to come.

Further Research. A number of areas can be identified in which future research can further our understanding of CLT's role in communication strategies for participatory sustainable development. First, it would be of great interest to learn if practitioners working with the FSSD can communicate more effectively by incorporating our suggestions (section 3.5) into their practice. Second, while our research addressed a hitherto unexplored synergy between CLT and CPSD strategies, we were unable to test CLT's predictions in a real-life communication scenario. Previous research in CLT has mostly tested *individual* variables associated with the high and low construal mindsets. We feel that it would be intriguing to test communication strategies in which *multiple* high construal variables are emphasized, thereby attempting to maximize the resonance of the communication with the high construal mindset. Finally, differences in cultural and social norms are of utmost importance in designing successful framing strategies. It is likely that the individual variables differentiating high and low construal mindsets will change depending on the socio-cultural norms of the target audience. Applying CLT's predictions to a *specific* cultural context may yield some very important findings.

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Appendix 1. Psychological Barriers to Participatory Sustainable Development

As a preliminary round of research for our thesis, we examined a number of different classifications of barriers to participatory sustainable development. Our work in this section was greatly informed by the recent works of Gleyzes (2007), Santa (Takács-Sánta 2007), the American Psychological Association (2009), the Center for International Development (CID) at Harvard University (Leiserowitz et al., 2004), and Crompton and Kasser (Crompton and Kasser 2009). We found that a broad classification can be identified between *environmental* barriers, *neurological* barriers and *psychological* barriers. Environmental barriers often pertain to entrenched economic and/or cultural paradigms, and are alternately known as structural, systemic, and institutional barriers. Neurological barriers are cognitive mechanisms that have evolved over hundreds or thousands of years as the result of evolutionary adaptation and repetitive neurological processing. Psychological barriers pertain mainly to our *perception* of the world, and do not necessarily have a counterpart in the "real world".

A-1.1 Psychological Barriers

Psychological barriers are distinguished from neurological and environmental barriers in the level of immediate control available to the individual to overcome the barrier. While environmental—and perhaps even neurological—barriers can, at times, be addressed by individual action, dismantling them requires intervention into a structured system. In the case of environmental barriers, the structured system is society, or one's environment; in the case of neurological barriers, the structured system is the "wiring" of the human brain. While there is significant interplay between environmental, neurological and psychological barriers, the latter can presumably be overcome by individual volition, or by intervention of the communicator. Comprehensive studies and reports have begun to examine psychological barriers in an attempt to better understand the complex psychological dynamics that confront communication strategies for participatory sustainable development (Crompton and Kasser 2009; APA 2009; Shome and Marx 2009).

A-1.1.1 Perceived Psychological Distance

Based on widespread consensus in the literature we reviewed, we were able to identify *perceived psychological distance* as a major, upstream[10] barrier to CPSD. Overcoming the barrier of perceived psychological distance thus became the primary focus of our work.

The term "psychological distance" does not appear to be frequently used to describe perceived distance from global problems of non-sustainability. We only came to use the term after identifying Construal Level Theory as the focus for our research. However, based upon our research, there appears to be all-but unanimous agreement that peoples' tendency to perceive global problems of non-sustainability as (**quote a bunch of pieces here**) is a dynamic that is particularly troublesome to efforts to mobilize participatory action towards sustainable development.

A-1.1.2 Environmental & Neurological Dimensions of Psychological Distance

In examining the difficulties involved in measuring environmental degradation the landmark Millennium Ecosystem Assessment noted, "the effects are slow to become apparent, because they may be expressed primarily at some distance from where the ecosystem was changed, and because the costs and benefits of changes often accrue to different sets of stakeholders." (MEA 2005). Weber (2006) notes, "Personal experience with noticeable and serious consequences of global warming is still rare in many regions of the world…The time-delayed, abstract, and often statistical nature of the risks of global warming does not evoke strong visceral reactions" (Weber 2006).

From these perspectives we can see that the barrier of perceived psychological distance from problems of non-sustainability is in large part due the inherent nature of these problems. It would therefore seem that people are almost *bound* to perceive these problems as distant. Furthermore, there are strong indications that reversing this natural tendency in human perception may be very difficult. A recent article from the Center for Research on Environmental Decisions at Columbia University explains that perceived psychological distance is due to the "attentional dominance of affective, concrete and immediate threats over those that are conceptual, distant, and abstract" (Roser-Renouf and Nisbet 2008). This is likely due to the fact that 50% of the cortex of the human brain is dedicated to the processing of *visual* information (Gleyzes 2007).

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[10] An upstream barrier would denote a barrier that, once removed, would clear the way for other, secondary barriers to be overcome.

These mental and neurological traits have evolved over thousands of years. These evolutionary traits are not random—they evolved in concert with our direct experience of the world. Because problems of non-sustainability are intrinsically subtle and imperceptible, and because the mental, psychological and neurological traits of human beings have evolved within this contextual reality, the problem of perceived psychological distance is a major barrier to successfully mobilizing participatory action towards sustainability.

A.1.2 Classification of Barriers

In our research, we found evidence of an increasing appreciation for the two-way flow of culture, values, ideas and beliefs between the individual and society, and an increased acknowledgement that one-dimensional classifications of barriers are likely to miss the subtle interplay between specific actions, specific circumstances, and specific barriers to action (Leiserowitz et al., 2004). It can be clearly stated that drawing rigid demarcations between attitudes, behaviors, and environmental, psychological and neurological barriers is difficult and of limited use. In fact, doing so may even *inhibit* the identification of solutions to these barriers (APA 2009).

Nonetheless, each classification of barriers reflects a unique perspective, and each perspective highlights the importance of different considerations. Our thesis highlights the importance of psychological distance as a first-order barrier to participatory action. Based upon the unique perspective of our research, we have created a novel classification of psychological barriers to participatory action. The 3-tiered classification that we offer below views barriers to participatory sustainable development relative to perceived psychological distance. Because our classification includes varying scales of perceived distance from the self, it is likely to closely reflect the perspective of previous work concerning in-group/out-group, domain/circles of impact (Roser-Renouf and Nisbet 2008), dimensions of risk perception (Roser-Renouf and Nisbet 2008), and perceived self-efficacy. Our selection of individual barriers closely follows the work of Santa (Takács-Sánta 2007) and the APA report *Psychology and Global Climate Change*, though our classification of these barriers is entirely unique.

The reader should know that our research in barriers represents a preliminary round of research, which led us to identify CLT as a strategic

tool. Thus, the classification reflects our research *before* we selected Construal Level Theory as the focus of our thesis. A classification that was made with CLT in mind from the outset would undoubtedly be much different from ours. Furthermore, because our research in barriers represents a preliminary stage of our work, we were not able to achieve as much refinement in our classification as we might have liked. Notwithstanding its incompleteness, we feel that the perspective offered by this classification can be helpful in understanding barriers to participatory sustainable development.

Referring to Figure A.1.1 below, our classification includes three primary dimensions of psychological distance, represented by three large circles. The outermost circle is the extreme of perceived psychological distance, and can be called "out group". The space outside of the "out-group" circle can be associated with environmental (structural/institutional) barriers. The next largest circle is an intermediary dimension of psychological distance, which we can call "in group". This dimension may be a part of an individual's in-group, though it is still separate from the individual self. Given that CLT researchers acknowledge many dimensions of abstraction (Liberman et al., 2007b) this intermediate circle could be considered a *relatively* high dimension of psychological distance. The next circle is "self", and is the individual and their self-representation. The innermost circle represents neurological barriers, though it is not a part of our primary, 3-tiered classification of psychological barriers.

Our depiction of absolute boundaries between self, in-group and out-group in Figure A.1.1 is only to accentuate varying degrees of psychological distance, and the transition between high and low construal mindsets. To our knowledge, no previous research in CLT has defined absolute dimensions of psychological distance. The reader should understand that this is a general selection of barriers, *classified according to psychological distance from the self*.

Factors such as sense of inefficacy, apathy, anxiety, and denial have been excluded from our primary taxonomy of psychological barriers. Instead, we consider these as psychological reactions to environmental barriers. While these negative reactions can become barriers in and of themselves, they appear to be secondary ramifications of environmental conditions. We have also attempted to differentiate primary psychological barriers from coping mechanisms (section A-1.3.6). These are self-designed strategies people use to cope with the negative effects of institutional barriers, as well as the negative psychological responses that follow. Aiding us in making these

distinctions was the work of Crompton and Kasser (2009), Ojala (2007), and the American Psychological Association (2009).
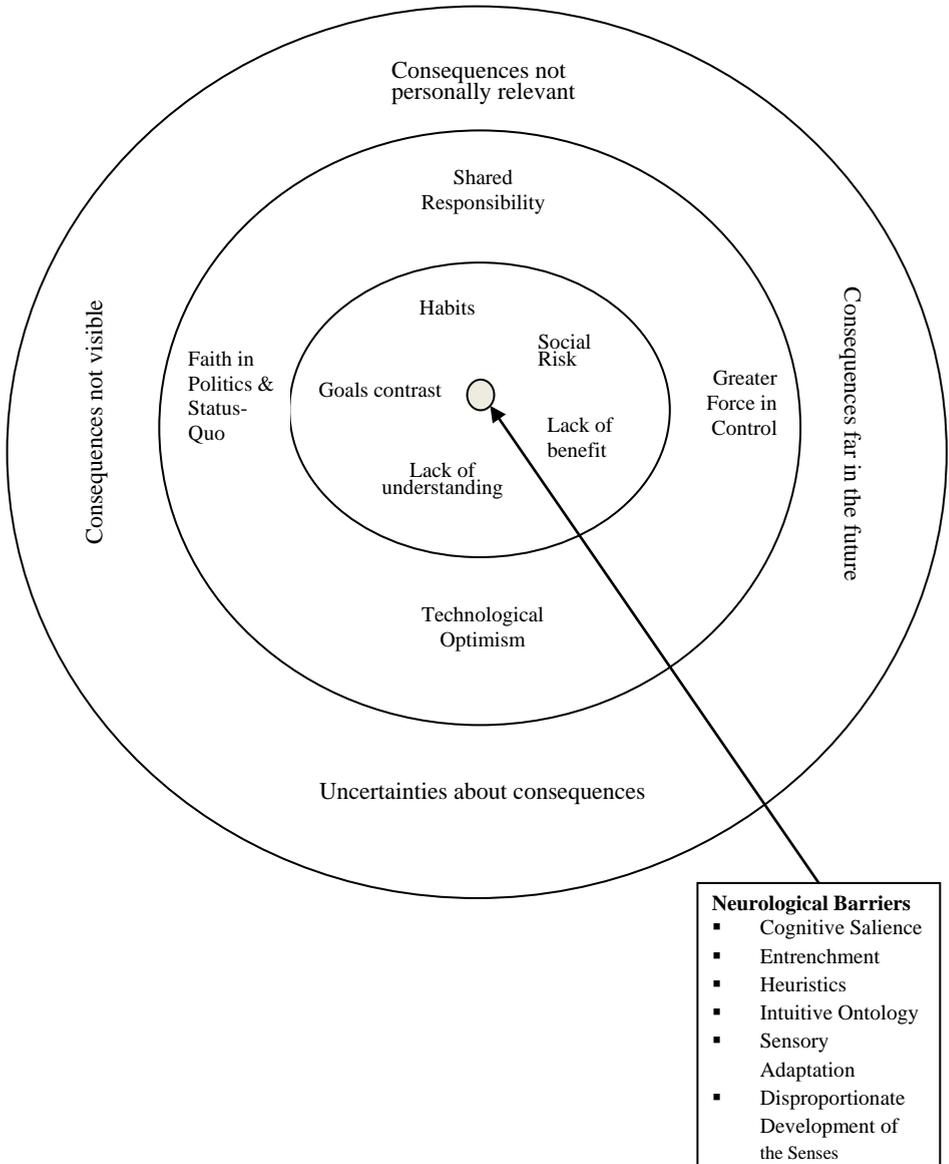

Figure A-1.1. *3-tiered classification of psychological barriers to participatory sustainable development. Classified according to perceived psychological distance from the self.*

A.1.2.1 Self: Psychological Immediacy

- *Concern for Self-Benefit*: Participatory action towards sustainability often entails no directly tangible benefit for the individual. Culture and social norms are a powerful mediator of the concern for self-benefit. Research has shown that some cultures place more emphasis on individual pursuits, while others consider societal pursuits most important (Arnocky et al., 2007). In individualistic cultures, people place a heightened identification with the physical borders of their body (Takács-Sánta 2007), and are thus likely to have a heightened concern for self-benefit. Generally speaking, Western cultures are regarded as individualistic.

- *Habits:* Many environmentally significant actions require readjustments to well-established behavior patterns. Habitual behaviors are often formed, not just from personal preferences, but also in an effort to cope with the constant and at times overwhelming demands of the modern world (Gleyzes 2007). As such, changing personal behaviors can also mean shifting elaborately designed psychological and behavioral coping strategies.

- *Contrast with already set goals:* Actions that are relatively more significant in terms of their potential to create change are also more likely to contrast with existing ambitions and goals (APA 2009). Even among those who are willing to readjust their mundane habits, there is often limited willingness to sacrifice pre-meditated behaviors and pre-determined goals (Leiserowitz et al., 2004). Technology and convenience frequently mediate this barrier. For instance, while a person may be willing to purchase biofuels, they may be less willing to sacrifice their long-held love of gas-guzzling race cars (Gleyzes 2007).

- *Lack of understanding:* Some people are still unaware of the climate change risks and mechanisms, while some others do not know what specific actions must be taken to mitigate it (American Psychological Association 2009). This barrier is very complex and is often mediated by transpersonal factors such as media, education, corporate and/or political agendas and religious dogma. The particular manner in which information is presented is a highly significant factor as well. The fact that that many people have a natural aversion to the scientific language is of major concern to CPSD strategists.

- *Social risk of change:* While many countries show encouraging signs of a society-wide shift towards the popularization of environmentally significant actions (Gleyzes 2007), most such actions remain fringe in relation to the status quo. Any instance in which an individual's actions

contradict social norms is likely to give rise to psychological discord, and perhaps even primordial fears of being judged and eventually marginalized by their larger community (APA 2009).

A.1.2.2 Relatively High Psychological Distance

- *Beliefs that a Greater Force is in Control:* These beliefs are characterized by the intervention of a force beyond the self, or the belief that events have been pre-determined by some external factor. They including messianic traditions, beliefs in human divinity, beliefs in "divinely" fixed astronomical dates such as the 2012 "cult" and beliefs in superstitions or prophecy (APA 2009). Modern beliefs such as "tipping points" and "paradigm shifts" (Dunlap and Riley 2008) can also be included, since they involve an automatic process where no personal action is required. This barrier can also be *resorted to* as a coping mechanism, helping a person adjust to a systemically non-sustainable society (section A-1.3.6).
- *Faith in existing political and economic systems or institutions:* Recent research confirms that public beliefs and values about sustainable development closely follow political dividing lines (EcoAmerica 2008). Unwavering faith in "free-market solutions" has long plagued the advancement of the goals of sustainable development (Jackson 2009). These beliefs reinforce the widespread public notion that all environmental problems are "manageable" (Takács-Sánta 2007). This barrier is also closely related to questions of disproportionate flows of power, inequity and systemic oppression, since it is to the advantage of embedded power structures that this barrier be maintained (Freire 1970).
- *Technological optimism:* Closely related to fate beliefs, technological optimism reflects a belief in perpetual progress (Schiavone, 2007), boundless human ingenuity, and omnipotent technologies.
- *Responsibility shared amongst many people:* Environmental problems are often caused by collective behavior, where each individual plays a minor role. Thus none is virtually innocent while everybody owns a little responsibility (Takács-Sánta 2007). This barrier is strongly mediated by cosmology, culture and social norms. In cultures where there is more *trust*, people will be more likely to trust that others are "pitching-in" to solve problems of non-sustainability. In more individualistic cultures, people are more likely to assume that everyone is "out for themselves".

A-1.2.3 Out-Group: High Psychological Distance

- *Consequences are not visible:* Many problems of environmental degradation involve factors at microscopic scales, invisible culprits such as CO_2, and complex, far-reaching chains of cause & effect (Takács-Sánta 2007). The negative ramifications of environmental actions often occur far

from the place where they originated. While it may seem that increased scientific knowledge should lead to increased awareness, concern, and, thus, action, many research findings contradict this assumption (Kellstedt et al., 2008).

- *Consequences far in the future:* Today we are experiencing the negative effects from developmental decisions that were made in the 18th century. Perhaps if more genuine foresight had been given to these decisions, we would be better prepared to confront the global problems we face. Humans have an inherent tendency to resort to short-term time perspectives (Princen 2009), and it can thus be difficult to convince people that non-sustainability is a genuine threat to our well-being (APA 2009). An intergenerational worldview is more likely in families or cultures that emphasize the importance of cross-generational interactions between children and grandparents (Princen 2009). This is known as the "Grandmother effect" (Princen 2009).

- *Consequences far in space:* Direct experience of global problems of non-sustainability is still rare in most of the world, and so these problems are generally thought of as being far away (Weber 2006). Overcoming this barrier by literally decreasing spatial distance from these problems (i.e., visiting a poverty-stricken country) has the potential to catalyze a profound shift in beliefs and values.

- *Uncertainty about consequences:* Human understanding about the complex dynamics behind global problems still remains incomplete (MEA 2005). Much of the information regarding these problems reaches the public through scientists. Given the objective nature of the scientific tradition, this information is often reported with a certain degree of uncertainty, which is likely to reinforce this barrier (Jamieson 2006). This is likely to make the potential negative consequences of global problems appear less likely. A direct correlation exists between the perceived probability of an event and willingness to act to affect it (APA 2009)**.**

A-1.3 Psychological Consequences of Environmental Barriers

Attempting to draw a clear demarcation between structural barriers to action and psychological barriers is exceedingly difficult, and may not be entirely useful. Government and society largely shape culture (Jackson and Michaelis 2003), which creates the context within which all individual decisions are made. In turn, millions of individual decisions made over long time periods, as well as millions of interactions between millions of individual actors, continually shape, reinforce and reshape culture and

cultural values (Knott et al., 2008). For this section, we will focus on the psychological consequences of environmental (structural) barriers to action.

A-1.3.1 Cultural Capital

Edgar Morin states that, "Culture is made of the totality of knowledge, skills, rules, standards, prohibitions, strategies, beliefs, ideas, values, and myths passed from generation to generation and reproduced in each individual, that controls the existence of the society and maintains psychological and social complexity" (Morin 1999). The uniqueness of Morin's definition is that it includes "rules, standards, prohibitions" and "strategies". These factors pertain to structural and legal elements of a society that reinforce cultural norms. The concept of cultural capital simply entails the "evolving stock" of culture (Knott et al., 2008). Thus, for our thesis, the term "cultural capital" signifies the "evolving stock" of culture as defined by Morin.

A-1.3.2 Lock-In to Non-Sustainability

The flow of cultural capital is multi-directional, and no action is inert—everything that gets "done" creates a shift in the overall flow (Figure A.1.1). The current flow of cultural capital is non-sustainable. Attempts to redirect this flow towards sustainability must confront a prodigious flow that is reinforced by the daily actions of nearly 7 billion people. By virtue of this prodigious force, global society appears trapped in a non-sustainable trajectory of development. In the sustainable development, literature this dynamic is often referred to as *lock-in.* Lock-in denotes "structural problems" that are antithetical to sustainable development and "deeply rooted in social production and consumption patterns" (Elzen et al., 2004). The term "lock-in" most often appears to signify either *technological* lock-in and/or *structural* lock-in. However, lock-in can occur on many levels. Jackson and Michaelis write about *consumer lock-in*, and tell us, "We appear to be locked in to current consumption patterns by a combination of market incentives, psychology and conditioning, social structures and norms, institutional frameworks, cultural values and narratives" (Jackson and Michaelis 2003). The latter definition comprehensively reflects lock-in at the level of culture, or *cultural lock-in*.

A-1.3.3 Cultural Lock-In and Cultural Innovation

By combining several of the perspectives given above, we arrive at a satisfactory definition of cultural lock-in: "*Cultural lock-in is the evolving*

stock of non-sustainable structural, psychological and cultural patterns, social norms and values that have acquired prodigious force by virtue of their deeply entrenched and continually reinforcing nature".
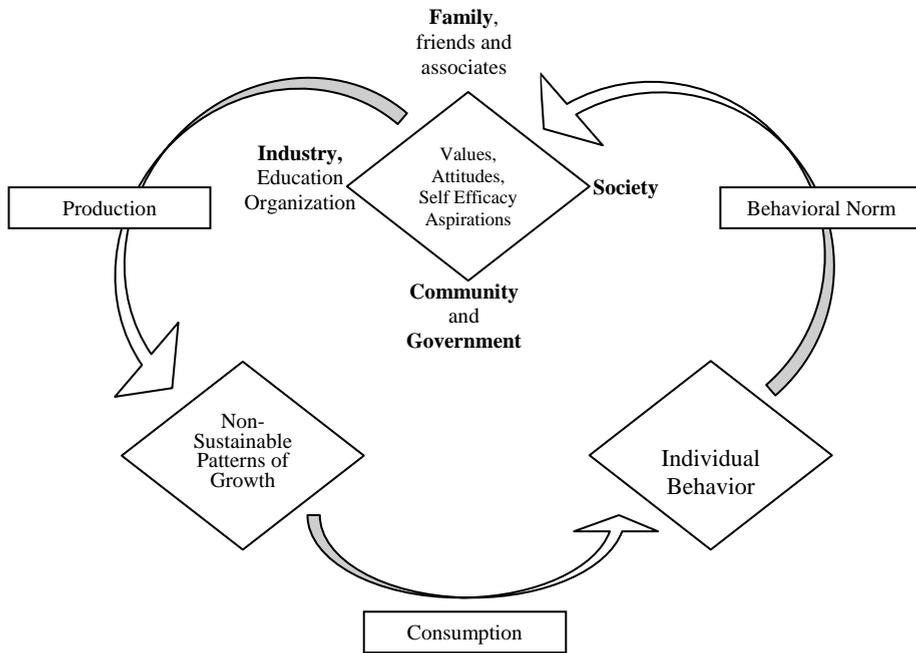

Figure A.1.2 *Model of the multi-directional flow of lock-in to non-sustainability. Adapted from Knott, Muers & Aldridge (2008).*

Cultural lock-in can easily lead to feelings of low personal efficacy. An article from the *International Journal of Sustainability Communication* acknowledges that, "low efficacy is likely to be a very important inhibitor of action, arising from structural barriers, established and difficult-to-alter routines, hopelessness…" (Roser-Renouf and Nisbet 2008). A UNEP report titled *Communicating Sustainability* states that "Good communications can often be successful in persuading people that they have a role to play in sustainable development. But this opportunity will be wasted unless the infrastructure is there for them to make a contribution" (Shea and Montillaud-Joyel 2005).

Recognition of cultural lock-in to non-sustainability is a sobering realization, and it gives rise to the obvious question: "What can be done about cultural lock-in?" In the literature discussing the various levels of non-sustainable lock-in, we read that *innovation* is the way out of lock-in

patterns. For our thesis, we refer to *cultural innovation* as a form of participatory sustainable development in which participants consciously act to alter non-sustainable patterns of cultural lock-in. Cultural innovation can take may forms, several of which are examined in the main body of our thesis.

A-1.3.4 Psychological Consequences and Cognitive Dissonance

Factors such as sense of inefficacy, apathy, anxiety, and denial are often considered psychological barriers. For the current paper, we instead regard them as psychological reactions to environmental barriers and cultural lock-in. The validity of this distinction has been corroborated by the work of the American Psychological Association (2009), Crompton and Kasser (2009), Shea and Montillaud-Joyel (2005), Leiserowitz et al. (2004), Jackson and Michaelis (2003), and others.

Failure to adapt individual behavior to conform to social norms can lead to what sociologists call *cognitive dissonance*. This term refers to a natural psychological reaction that occurs when a person's *cognitions* (aspirations, opinions, beliefs, attitudes, and values) are contradicted by other *logical* observations (Lester and Yang 2009). The term indicates, in other words, the presence of a discrepancy between a person's aspirations and the realities that confront them. According to the theory of cognitive dissonance, people will always seek to resolve dissonance by changing behavior, changing their environment, avoiding dissonant information, or through normalizing the dissonance (Lester and Yang 2009).

Significant amounts of data confirm the existence of widespread concern for problems related to non-sustainability in the Western world (Leiserowitz et al., 2004; EcoAmerica 2008; WBCSD 2008). Concern for sustainability can therefore be said to be a commonly held *cognition*. If an individual holds pro-sustainaiblity values, and their culture is locked-in to non-sustainable patterns, it would likely produce feelings of cognitive dissonance. In attempting to reduce cognitive dissonance, individuals can either oppose the prodigious momentum of the non-sustainable flow of cultural capital, or *normalize* non-sustainability by conforming their behavior to their cultural surroundings.

A-1.3.5 The Trap of Cognitive Dissonance

So-called "small and painless" actions (Crompton 2008) like recycling and green consumerism are slowly becoming integrated into the status quo

(Gleyzes 2007). It appears fairly clear, however, that these behaviors have little potential to change the larger picture of society's lock-in to non-sustainability (Crompton 2008). Because small and painless actions will do little to change our society's course of non-sustainable growth, these actions may even represent acts of resignation to some people, and acceptance of society's lock-in to non-sustainability.

Meanwhile, acts of cultural innovation—public-sphere, activist actions, that seek to dislodge the dynamic of cultural lock-in—are often more commensurate with the scale of the problems we face (Stern 2000). While these actions can be much more potent than private-sphere behaviors, they can place their proponents in direct opposition to the mainstream flow of cultural capital. Because discord between an individual and their culture is likely to produce experiences of cognitive dissonance, we can say that long-sustained efforts of cultural innovation may become psychologically disadvantageous to the actor. Direct opposition of cultural lock-in can also threaten personal safety, economic status and legal standing (Snow and Soule 2010). Thus, by acting upon their personally held cognitions, in a manner that is *commensurate* to the scale of global problems of non-sustainability, individuals are likely to augment the experience of cognitive dissonance that their actions were originally intended to reduce.

A-1.3.6 Coping Strategies

Cognitive dissonance can be accompanied by feelings of fear, inefficacy, guilt, apathy, anxiety, and denial. Humans can attempt to resolve cognitive dissonance and its accompanying negative emotions, through the creation of *coping mechanisms* (Crompton and Kasser 2009). Coping strategies are psychological strategies that help people suppress feelings and thoughts about anxiety-producing situations, and help them to protect their identity (Crompton and Kasser 2009) and can also be called *emotional management strategies* or *therapeutic strategies* (Crompton and Kasser 2009).

The design and creation of these coping strategies is usually an unconscious and intuitive process. Psychologists have identified many complex psychological mechanisms that people commonly use to cope with negative reactions to problems of non-sustainability (American Psychological Association 2009). Connell et al. showed that even intense levels of concern for global environmental issues can result—not in activism—but in feelings of apathy and inactivity (Ojala, 2007). Lertzman suggests that these feelings of apathy are actually psychological coping strategies formed in response to seemingly unsolvable global environmental problems. Many

authors have noticed that, being locked-in to a culture of consumerism can lead to feelings of depression, and that *more* consumption can act as a coping mechanism to deal with feelings of "spiritual isolation" (Jackson and Michaelis 2003).

A-1.3.7 Adaptive Preference

Coping strategies can themselves become locked-in to repetitive, though counter-intuitive, behavioral patterns. Through the work of Amaryta Sen and Martha Nussbaum, the coping mechanism called *adaptive preference* has become familiar to the literature on human development. Adaptive preference is closely related to cognitive dissonance, and occurs in circumstances in which our immediate preference is not available to us. In these circumstances, human beings can intuitively adapt their preference to conform to unfavorable conditions.

An adaptive preference is distinguished from an immediate preference in that adaptive preferences are formed under conditions that inhibit choice (Khader 2009). The deep levels of entrenchment of our locked-in society do much to inhibit the choices available to global citizens with regard to sustainable lifestyles. While viable courses of action are available, the most *effective* of those actions entail opposition to mainstream flow of cultural capital, which we have seen can have negative psychological, social and economic consequences. We can thus see how, under these conditions, citizens would be likely to adapt to non-sustainable lifestyles.

However, if people were only to adapt their *behavior*, they would continue to live with cognitive dissonance, realizing that their true preferences cannot be fulfilled. Thus, people actually adapt their preferences and cognitions to conform to their social reality. It appears very plausible that a great number of global citizens have adapted their behavioral patterns—and their psychological constitution—to conform to the reality of non-sustainable lock-in, *even though their adaptations do not represent their immediate preference.*

We feel that adaptive preference and other psychological coping mechanisms go a long way toward explaining the presence of many common attitude-behavior gaps. We would suggest that a high percentage of people *do* in fact want to live in a sustainable society, and they have simply adapted their preference to conform to the non-sustainable context in which they live. Communication strategists should consider adaptive preference a major hindrance to their efforts, though it should always be

considered within its specific cultural context. While this barrier appears to be quite pernicious, its removal may release a surge of willing participant-citizens.

A-1.4 Neurological Barriers

- *Availability Heuristic:* When ask to estimate the probability of a future event human beings tend to rely on the so-called availability heuristic. According to this, the harder it is for us to imagine or recall a similar event in the past, the lower we estimate the probability of a future event (Takács-Sánta 2007). Because direct experience of the negative impacts related to problems of non-sustainability is still relatively rare, the risks associated with these problems are by default perceived as less probable.
- *Disproportionate development of senses:* It is estimated that "fifty percent of the cortex of the brain is devoted to processing visual information, indicating a profound, evolutionary commitment to vision as a means of joining inner and outer conditions" (Gleyzes 2007). Our brain thus gives intense precedence to those things that can be visually perceived, and, presumably, less to those that cannot.
- *Ontological Salience*: Closely related to the above barrier, the principle of ontological salience explains that some things, by virtue of their very nature, will catch our attention more than others (Geeraerts and Cuyckens 2007). Ontologically salient events, objects or circumstances are naturally predisposed to capture our attention, while ontologically non-salient features are less likely to do so. Global problems of non-sustainability appear to be ontologically non-salient *by virtue of their very nature*. Often, things that are ontologically salient are intuitively thought to be more important: *shiny* objects catch the attention and *precious* materials are usually shiny. Ontologically non-salient things tend to be perceived as less important.
- *Perceptual Limitations:* Some of the barriers reviewed in section A-1.2.3 may have their roots in the physical inabilities of the human brain. The very real limitations imposed on us by our human senses should not be underrated (Takács-Sánta 2007). It is also known that the human mind can only keep track of a small number of variables at one time (**MSLS**), and we may thus be incapable of completely understanding the complexities of climate feedbacks and other downstream effects related to non-sustainability. The "precautionary principle" can be seen as an attempt to offset this barrier.
- *Intuitive Ontology*: Through our perceptual limitations and via cultural inheritance, human beings acquire inaccurate representations of the world that are upheld as inexorably true (Boyer 1998). Many scientifically proven truths contradict our intuitive expectations, and our naïve representations of the world can endure through generations.

A-1.5 Discussion

As can be surmised by the above classification, neurological barriers are largely the result of evolutionary adaptation. These evolutionary traits express themselves in our beliefs, assumptions, values, culture and social norms. The "evolved psychological mechanisms" approach to cultural and psychological evolution "views cultural behavior, mental representations, and material artifacts as part of the human phenotype, subject to natural selection" (Flinn 1997). From this evolutionary perspective, says Flinn (1997) the behaviors and mental representations that are selected do not necessarily represent the most evolutionary advantageous choices (Flinn 1997). "Nor does it imply that the best possible (i.e., most adaptive or optimal)…trait will be "invented" by individuals whenever needed" (Flinn 1997). "We all make mistakes", states Flinn. Thus, our culture, and the evolution of our mental representations, is subject to the selection of maladaptive traits.

An example of a mental representation that can be considered a maladaptive trait is that of "intuitive ontology". An intuitive ontology is a "naïve theory" about the world. Intuitive ontologies take the form of unquestioned assumptions and expectations, which are regarded as true, though they are not (Boyer 1998). An example of an intuitive ontology is what Boyer calls "intuitive physics" (Boyer 1998). Boyer states that, "Peoples' "naïve" expectations about statics and dynamics of solid objects do not usually converge with those of scientific physics (diSessa 1988; Kaiser et al. 1986; McCloskey 1983)" (Boyer 1998). Thus, what people *expect* or *assume* to be the truth about physical realities is, in fact, a false representation.

We suggest that our inability to recognize our interconnectedness with global problems of non-sustainability is one such maladaptive intuitive ontology, for, even though the healthy functioning of our planet sustains, benefits and determines our lives, we intuitively assume it to be otherwise. Cokely and Feltz (2009) suggest that maladaptive intuitive ontologies can be consciously changed through *adaptive cognition*—consciously adapting our naïve ontology to conform to reality. They suggest that the process of adaptive cognition "will require the exploration of the interplay between persons, processes and task-environments" (Cokely & Feltz 2009). This multi-directional and interconnected perspective of people, processes and task-environments is reflected in the perspective of barriers to sustainable development adopted in this thesis.

Whether or not we will be able to properly adapt our ontology to conform to the reality of an interconnected world is in many ways a central question to sustainable development. We would support the view of Cokely and Feltz and suggest that this is possible. As a beginning, we can heed the advice of Crompton and Kasser (2009), who suggest that an important first step in helping individuals overcome psychological barriers is simply to make them aware of their existence. By helping people to realize their maladaptive psychological representations, we may begin to disassemble the latter. However, we would also warn that the process of adaptive ontology at the scale of our entire species is likely to take a fairly long time. For the immediate future, we suggest that communication strategists treat the barrier of perceived psychological distance from global problems of non-sustainability as a condition inherent to these problems, and attempt to identify the path of least resistance by which to navigate *around* this barrier. Construal Level Theory can be of great help in this regard.

A-1.6 Conclusion

Tendency to jump to quick conclusions regarding barriers to action could easily result in the design of misguided communication strategies. The literature from cognitive science can greatly aid the communication strategist in understanding the psychological intricacies that lie beneath the surface picture painted by trends and survey data. The findings from our research emphasize the importance of recognizing the mutually reinforcing nature of environmental and psychological barriers to participatory sustainable development. Given that differences in environmental barriers vary greatly across national boundaries, we can expect the same to hold true for psychological barriers. Communicators should thus also understand the variance in barriers across political boundaries, cultural contexts, and economic regimes. Based upon the aforementioned variables, every action will have a unique set of contextual variables, and, accordingly, a unique set of barriers. Our recommendation for the communicator is to target a particular action—or set of actions—and gain a thorough understanding of the cultural and psychological anatomy of that particular case. The use of predetermined classifications of barriers should be specified to one's specific communication agenda.

Appendix 2 Review of Experimental Findings in CLT

In this chapter, we review a number of experiments in which the predictions of Construal Level Theory have been put to test. These experiments form the process by which the numerous variables related to the concept of construal have been identified (Wakslak and Trope 2009a). This research process can be viewed as an ongoing attempt to comprehensively map the differences between high and low construal levels.

- *Spatial Distance:* Research has repeatedly shown that spatial distance is the "primary source analog" for our conceptualizations of time (McGlone & Pfiester 2009). Thus, people tend to understand time *in terms of space*. This is clearly reflected by peoples' linguistic references to time, such as "time is *creeping by*", or "that event is *drawing near*". This provides ample justification for CLT's formation of a unified theory of psychological distance, especially given that *social* and *probability* dimensions of psychological distance are also conceptualized in terms of their *nearness* to the self. CLT research has shown that mental representations and decisions made for spatially distant events will give primary consideration to abstract, high construal variables. (Henderson et al., 2006).
- *Temporal Distance:* Temporal distance changes the way people mentally represent events, objects and actions (Trope and Liberman, 2003). Studies show that the association of level of construal and time perspective is bi-directional, in that time perspective affects level of construal and, in addition, level of construal affects time perspective. (Liberman et al, 2007b). Furthermore, high psychological distance in the *past* has much the same effect as high future psychological distance (Liberman et al., 2007b). The high construal mindset is associated with an ability to think in terms of long time scales (Trope and Liberman 2003).
- *Social Distance:* Social distance influences the way individuals perceive and represent others. Specifically, as social distance increases, people shift to high construal representations (Chandran and Thomas, 2005). It has been found that a more abstract construal is used in considering out-group members than when considering self and in-group members (Trope and Liberman 2003). One's own behavior, or that of the in-group, is more likely to be construed in situational, concrete terms, while the "others'", or

out-group's, action will be construed in abstract, high construal terms (Trope and Liberman, 2003). Social distance can be increased by making considerations for others, or the "out-group" (Liberman et al., 2007b), adopting a 3rd person perspective (Nan 2007) or priming an event with low construal variables (Wakslak and Trope 2009a).

- *Perceived Probability:* Perceived probability has recently been included as a dimension of psychological distance (Bar Anan et al., 2006). Peoples' direct, everyday, low construal experiences are the basis by which they judge the probability of an event. (Takács-Sánta 2007). Psychologically distant events—which do not form a part of peoples' everyday experiences—will be perceived as a distant probability, while familiar experiences will be perceived as more probable.

- *Short vs. Long-Term Benefit:* Short-term benefits of an action are associated with low construal representations, while far-sighted focus is related to high construal representations. Several experiments have demonstrated that an increase in psychological (social) distance gives greater precedence to high construal concerns (Chandran and Thomas, 2005). Research in CLT has shown that the activation of the high construal mindframe helps people to develop an extended perspective of time (Trope and Liberman 2003).

- *Values:* Values are often defined as trans-situational guides of behavior (Leiserowitz et al., 2004). which indicates that they are not likely to change across situations. Since high construal level representations always "emphasize what is central and defining" (Wakslak and Trope 2009a), values are generally considered a high construal attribute. Research has shown that values predict behavioral intention more accurately in psychologically distant situations than in proximal situations (Eyal et al., 2009). However, CLT researchers make a distinction between "central values" (superordinate) and "peripheral" (subordinate) values (Liberman et al., 2007b), which correspond to high and low construal levels respectively. Central, high construal values are therefore predominant guides for psychologically distant decisions (Kivetz and Tyler, 2007). Societal values, which are associated with a high social distance relative to the individual, are also considered to be high construal values.

- *Altruism:* Research in Construal Level Theory has shown that people are more likely to commit to altruistic behavior when perceived psychological distance is high than in near future situations (Angerström and Bjorklund, 2009). Altruism, of course, innately involves extending oneself intentions beyond a limited self-perspective. CLT's founders have suggested that the

so-called "tragedy of the commons" can be attributed to the fact that humans' altruistic nature is a high construal attribute, while our everyday actions are guided by low construal considerations (Liberman et al., 2007b).

- *Moral Concern:* Perceived psychological distance can moderate moral concern. Specifically, individuals are more likely to be motivated by moral concern in psychologically distant situations than in the near future (Angerström and Bjorklund, 2009).

- *Idealistic & Pragmatic Self:* Kivetz and Tyler demonstrated that high and low construal levels correspond to the "idealistic" and "pragmatic" self respectively. The idealistic self is a mental representation that places principles and values above practical concerns and reflects the person's sense of true self (Kivetz and Tyler, 2006). Idealistic self will be prominent in psychologically distant scenarios, while the pragmatic self will dominate in situations of low psychological distance.

- *Simplicity:* Relative simplicity is associated with an abstract, high-level construal. This is corroborated in the study by (Binder et al., 2005), which showed that abstract (high construal) concepts activated *less* brain activity than did concrete (low construal) concepts, thus indicating greater simplicity for abstract concepts. High construal mind frame has been found to correspond with a more simplified representation of one's self (Liberman et al., 2007b), and also to make task performance seem less complicated (Liberman et al., 2007b).

- *Psychological Distance & Affect:* A great amount of research in social psychology has shown that psychological distance decreases the intensiveness of affective response (Liberman et al., 2007b). Research in Construal Level Theory has confirmed this. Thus, emotional appeals will be most effective in instances of low psychological distance. However, some emotions can be said to be more psychologically distant than others. Hunger, pain, happiness, anger and fear are all very immediate, "self" emotions, whereas so called "social emotions" such as pride, and guilt involve considering other peoples' perspectives, and, thus, a high psychological distance (Liberman et al., 2007b). This could also be true for emotions that entail considering the future, such as hope, anticipation or future anxiety (Ojala 2007). CLT thus predicts that appeals to high-level construal emotions, which require some distancing from oneself, will be more effective at high psychological distance than appeals to basic "self" emotions.

- *Cognitive empathy:* Cognitive empathy involves taking the perspective of another person and understanding the difficulties faced by the individual, while affective empathy means emotionally sympathizing with another (Liberman et al., 2007b). In instances of high psychological distance, appeals to cognitive empathy will be more effective than appeals to affective empathy (Liberman, Tope and Stephan 2007). Appeals to cognitive empathy can also be called a "cold frame", and appeals to affective empathy, a "hot frame" (Liberman, Trope and Stephan, 2007). We will use this terminology at points throughout our work.

- *Goal Commitment:* Action enjoyment increases when an action is regarded as rewarding of itself, i.e., when it fulfills an individual's more abstract purpose or reason for engaging in the action (Freitas and Higgins, 2002). When an event is primed in the high construal level, the goal is approached in an abstract way. Perception extends beyond the imminent sub goal at hand and considers the action as part of a broader superordinate goal. When goals are pursued via high construal mind frames, it has been found to evoke increased commitment to the attainment of the goal (Dhar and Kim, 2007). Individuals who are primed to pursue goals via a low construal mind frame are more likely to perceive their goal as transient and abandon it in favor of another pursuit (Fischbach et al., 2006).

- *Positivity:* The adoption of a high construal mind frame has been found to enhance positivity. (Liberman et al., 2007b). This corresponds with the increased effectiveness of a gain frame (Nan 2007) and positively defined objectives (Trope et al., 2007) in instances of high perceived psychological distance.

- *Subjective Well-Being:* Updegraff and Suh (2007) found that "happier people tend to think about themselves with higher level of abstraction than less happy people". Their research also found that when abstract thoughts are made salient through priming, people report an increase in life satisfaction. Remembering that the abstract mindset is largely synonymous with a high construal mindset, we can say that a high construal mind frame corresponds with higher life satisfaction, happiness and subjective well-being.

- *Desirability vs. Feasibility:* Concerns regarding the desirability of an event are salient in instances of high psychological distance, while the limitations imposed by situational factors are perceived as more important in psychologically near activities. (Liberman and Trope, 1998), (Trope and Liberman, 2003). Because feasibility concerns are less salient when

actions are undertaken with a high construal mind frame, high difficulty becomes less of a deterrent to action (Liberman and Trope, 1998), (Angerström and Bjorklund, 2009). Because high psychological distance is associated with low probability, it might seem counterintuitive to think that feasibility is *less* of a concern at high psychological distance, but, since the first days of research in CLT, this has been found to be the case.

- *Why and How:* In an early study in CLT, participants were required to describe a series of activities after having been primed in either a "why" or a "how" construal. After the completion of the task, participants who had been primed in the why condition described the activities in superordinate terms emphasizing more abstract features as opposed to those primed in the how condition (Trope and Liberman, 1998). "How" emphasizes the *process* of an action, while "why" considers its *purpose* (Freitas et al., 2002). When people are primed to construe action on a high level construal, attention is drawn to the broader meanings, and away from the peripherals (Vasquez and Buehler, 2007).

- *Creativity:* Construing actions more abstractly makes it easier for people to form surprising connections between seemingly unrelated concepts (Shapira and Liberman, 2009), and other studies have linked high construal mind frame with increased creativity. People may form their most ingenious ideas in circumstances perceived as psychologically distant (Liberman et al., 2007b).

- *Pro vs. Con:* It has been found that the positive dimensions of an action— the "pros"—are more salient in situations of high psychological distance, whereas "cons", or negatively defined actions, are more salient at high psychological distance (Eyal et al., 2004). These findings are congruent with the research regarding "desirability vs. feasibility" mentioned above. In a persuasive message, a "gain frame" emphasizes the positive outcome of compliance, while in a "loss frame" the negative dimensions of non-compliance are made salient. The persuasiveness of a gain frame is greater at higher psychological distance, while a loss frame is more effective in situations of low psychological distance (Nan 2007).

- *Self-control:* Self-control often entails acting in accordance with one's priorities. CLT research has shown that people act according to their priorities in situations of high psychological distance (Liberman et al., 2007b). Activation of high level construal has been shown to cause greater physical endurance, stronger intentions to exert self control and less positive evaluation of temptations that undermine self control (Fujita, Trope, Liberman, Levi- Sagi, 2006).

Appendix 3 Other Research from the Cognitive Sciences in Support of CLT

Social psychology widely embraces the notion that the human mind utilizes two basic modes of thinking (Slovic et al., 2002 and this reality has been explored in a number of "dual process" theories. While the distinction between high and low construal levels is unrelated to dual process constructs (Plaks et al., 2009), it is important to note that the concept that two distinct construals are used in human perception is widely embraced in social psychology.

A-3.1 Conceptual Metaphor

The work of George Lakoff in conceptual metaphor theory adds an interesting dimension to CLT's research perspective. According to Lakoff, *all* abstract conceptualizations actually have their root in concrete dimensions of experience (Lakoff 2008). Concrete experiences provide the "metaphor" through which we understand abstract realities. Lakoff's work has led to extensive research, and his theory is continually proven accurate (Angier 2010). It appears to be well accepted in the cognitive sciences that the abstract concept of *time* is understood through the conceptual metaphor of *space* (McGlone & Pfiester 2009). This is revealed in our language, when we say things like, "It's not *far off*", or, "Time is *passing by*". These expressions refer to physical movement in spatial experience, and reveal the concrete metaphor (space) by which we understand the abstract concept of time.

Spatial distance can easily be seen to provide the basic source for the *social* and *probability* dimensions of psychological distance as well. Families and friends that form a person's most intimate relationships were not necessarily chosen. They are likely to constitute the relationships that a person formed based on circumstantial experiences that made them physically proximal to those people for significant times (e.g., growing up with family, going to school with early friends, etc.). It is also known that a person's direct experience forms the source from which the probability of an event is decided (Takács-Sánta 2007). If a person has no direct, physically proximal experience of an event, they will gauge that event as less likely to happen than one that forms a regular part of a person's direct experience. From this perspective, a unified theory of psychological distance is quite natural.

A-3.2 Conceptual Hierarchies

Some of Construal Level Theory's founding researchers have suggested, "The concept of level of construal begins with the basic notion that objects and events are classified into categories" (Wakslak et al., 2006). This statement closely echoes the concept of "conceptual hierarchies" familiar to the cognitive sciences. The notion of conceptual hierarchies recognizes that the human mind organizes conceptual knowledge, events and other phenomena in different "conceptual relations". One such conceptual relation is known as a "conceptual hierarchy" (Coley et al., 2004). Conceptual hierarchies, like Trope's description of CLT, layer knowledge into categories, with abstract concepts representing the primary, superordinate layers of the hierarchies, and concrete concepts representing the subordinate levels. CLT researchers may thus be exploring a fundamental division in these conceptual hierarchies—that between the high (abstract) and low (concrete) construal mindset.

A-3.3 Neurophysiological Evidence

In neurophysiology we find ample evidence that abstract and concrete concepts are processed in distinct regions of the human brain (Binder et al., 2005). Utilizing magnetic resonance technique, Binder et al. showed that distinct neurological areas are activated in the identification of abstract and concrete words. Specifically, both concrete and abstract words were shown to activate a number of common areas in the left cerebral hemisphere, while only the concrete process extended to the right hemisphere. A number of other experiments in neurophysiology offer robust support for a primary distinction between abstract and concrete concepts (Wallentin et al., 2005).

A-3.4 Cultural and Cognitive Evolution

The categorization of our experience into abstract and concrete layers is also recognized in anthropology, another component branch of cognitive science. In an article published by the American Anthropological Association, we read that it is a "fact" that "evolution resulted in the emergence of species-specific cognitive capacities that predispose organisms to particular kinds of conceptual representations" and that some of these "ontological categories and…categorical distinctions along ontological lines are present from infancy" (Boyer 1998). Thus, the categorization of conceptual knowledge into hierarchies is a product of evolutionary cognition, and, as it begins in infancy, it may represent a

fundamental, structural trait of the human brain.

A-3.5 Heuristics, Entrenchment and Ontological & Cognitive Salience

CLT's founders have speculated that the cause of the default link between psychological distance and mental level of construal may be traceable to "a generalized heuristic that evolves as a result of repeated association between temporal distance and peoples' knowledge about future situations" (Trope and Liberman 2003). The process of *heuristics* is widely recognized in the cognitive sciences (McDonald 2009) as a process by which "information shortcuts" are created in the mind, allowing human beings to gather information efficiently. These mental shortcuts are associated with frequently used cognitive pathways.

Another aspect of heuristics is the concept of *entrenchment*. The *Oxford Handbook of Cognitive Linguistics* states, "the term *entrenchment* designates the storage of concepts and constructions as variably routinized items in long-term memory" (Geeraerts and Cuyckens 2007). The repetitive processing of cognitive routines thus leads to *entrenchment*, and processes of heuristics *utilize* entrenched pathways to create mental shortcuts.

As these entrenched pathways are continually used as shortcuts, they become more *salient* than others. This is to say that entrenched, repetitively used pathways are automatically *more likely to be used* than others. This is known as *cognitive salience*. The Oxford handbook states, "Since the use of concepts that are already activated requires minimal cognitive effort, a high degree of cognitive salience correlates with ease of activation and little or no processing cost. Currently inactive concepts, on the other hand, are nonsalient" (Geeraerts and Cuyckens 2007). Cognitively salient pathways are thus accessed with minimal processing cost, while non-salient pathways require overcoming this cognitive inertia.

Another type of salience, *ontological salience*, refers to factors of experience that are naturally more salient than others. "The idea is that by virtue of their very nature, some entities are better qualified to attract our attention than others and are thus more *salient* in this sense" (Geeraerts and Cuyckens 2007). The Oxford handbook goes on to use the example of a dog in a field to show that the dog in the field will be more *ontologically salient* than the field itself.

A-3.6 Discussion

If global problems of non-sustainability are inherently subtle and imperceptible, we can say that they are *ontologically non-salient*. That is to say that, by virtue of their very nature, they are less likely to attract our attention. If the default association between construal mindset and psychological distance is the "result of repeated association between temporal distance and peoples' knowledge about future situations" (Trope and Liberman 2003), we can say that the human mind has *evolved*—by repetitive processing—to represent ontologically non-salient global issues as psychologically distant.

Because of the ontological salience of our everyday experience, we have developed mental heuristics (short-cuts) to aid in our repetitive, everyday experience. With regard to our everyday experience, the low construal mindset is very likely to be *entrenched*, and thus more cognitively salient than our high construal mindset. However, the reverse should hold true for psychologically distant occurrences. Our repetitive processing of phenomena that are perceived to be psychologically distant would result in entrenched high construal pathways when high psychological distance is perceived. Therefore, even though psychologically distant representations are *inherently* less salient ontologically, when the condition of perceived psychological distance *does* exist, the high construal mindset should be most salient.

CLT's research can be explained as follows: in instances of high psychological distance, the high construal mindset will be cognitively salient. In our everyday actions, which are associated with instances of greater ontological salience, the low construal mindset will be cognitively salient. This understanding may prove to be of great importance to communication efforts for participatory sustainable development. If we accept the conclusion that global problems of non-sustainability are inherently less salient ontologically, and we accept the default relationship between psychological distance and mental construal, it would seem that the path of least resistance in communicating sustainability should be by way of high construal communication frames. It may be extraordinarily difficult to attempt to override these entrenched cognitive patterns.