

SUSTAINABLE DEVELOPMENT AND ECONOMIC CULTURES: DOES
INDIVIDUALISM UNDERMINE ECOLOGY AND SOCIETY?

by

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Title: SUSTAINABLE DEVELOPMENT AND ECONOMIC CULTURES:
DOES INDIVIDUALISM UNDERMINE ECOLOGY AND SOCIETY?

This project compared Zambia and the United States to see how different levels of industrialization affect a country's social and ecological sustainability. As countries industrialize, ecological sustainability seems to be dependent on individualistic material consumption choices whereas at lower levels of industrialization, economic poverty creates a more collectivist resource-sharing ethic. Social sustainability seems driven by the relationships that people are able to build with others (i.e. their ability to build social capital). Here, investment decisions are also important, but as countries industrialize, people need to make qualitatively different investments.

The data in this study, then, suggest that sustainable development is a function of resource allocation. While individualistic accumulation of resources advances industrialization, social and ecological needs are met when people choose to invest their resources back into community and society. Sustainable development, then, needs to consider how resource allocation patterns can be used to serve material, social, and ecological needs.

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CHAPTER I

INTRODUCTION AND REVIEW OF LITERATURE

More often than not, the definition of sustainable development (Holland, 2001; McNeill, 2000; Lele, 1991; Toman, 1992; Redclift, 1987; and Peterson, 1997) has weakly deferred to the Brundtland Report's (1987, p. 43) language as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." This idealistic phrasing has thus far translated into the form of prescriptions for the South's economic development - in other words, business as usual. (e.g. Chambers et al, 1992) Though debates over the meaning of "sustainable development" have added more perspectives that include social and ecological concerns (Lele, 1991), little action has been taken to operationalize this newer definition.

This study seeks to take the sustainable development rhetoric and apply it to a comparative analysis of two case studies, the United States and Zambia, in order to better understand how different levels of industrialization impact ecological and social sustainability. While many (Jones, 1987; Costa et al, 2003; Putnam, 2000; Shiva, 2000; -, 1994; etc.) recognize the negative effects of industrialization on society and the environment - pollution, alienation, etc. - few step beyond this recognition to better understand specific ways that level of industrialization is connected to forms of sustainability

While certainly the industrial age achieved unprecedented material development through the accumulation of capital for certain populations in the world, it did so at the expense of social relationships and environmental stewardship (not to mention those regions and populations who suffered in material terms under industrialization). Conversely, in

countries that did not benefit from industrialization, material development has lagged behind but social networks seem strong and the environment seems less impacted. The question is why?

This project argues that fundamentally different patterns of resource allocation in industrial and pre-industrial economies produce a stark difference in levels of social and economic capital. Further, it suggests that these imbalances of capital have repercussions on ecological, economic, and social sustainability.¹ Because economic sustainability has thus far received the bulk of attention in development circles, this project looks at the interplay between levels of industrialization and availability of social and economic capital to see how they affect ecological and social sustainability. Its arguments are based on the following two hypotheses:

- 1.) If a country is pre-industrialized, and has high levels of social capital (but low levels of economic capital) due to a poverty-driven penchant for collectivist resource allocation that creates a communal safety net, then sustainability indicators will be high, and
- 2.) If a country is industrialized, and has high levels of economic capital (but low levels of social capital) due to a liberal emphasis on personal fulfillment and individualistic materialism, then sustainability indicators will be low.

The primary questions driving these hypotheses were: 1. Is sustainability achieved through different means and different mechanisms at different levels of industrialization? 2. Are *pre-industrial societies*' (e.g. Zambia) resource allocation patterns more

¹ Ecological sustainability, rooted in ecological systems and agriculture development (Redclift, 1987), is generally defined as twofold: 1. consumption of either renewable or non-renewable resource that does not interfere with either their ability to regenerate or the ability to find renewable substitutes, and 2. production of waste by-products through consumption that does not negatively impact the earth's ability to assimilate them. (Daly and Cobb, in Goodland, 2002)

Economic sustainability here refers to human beings' ability to improve living standards by satisfying and maintaining material well being (Toman, 1992).

Social Sustainability refers to the maintenance of social cohesion, trust, or relationships. As Robert Goodland of the World Bank notes (2002, p. 2), "social sustainability means maintaining social capital."

See Appendix I for a fuller discussion of ecological, social, and economic sustainability.

collectivist than those of *industrialized societies*² (e.g. the United States)? and 3. If so, is this collectivist tendency more or less ecologically and/or socially sustainable than an individualistic one, and why?

To be sure, the dichotomous labeling applied to levels of industrialization in the United States and Zambia is clearly more black and white than reality would suggest. For example, a quick look at Zambia's history will reveal that during the late 1960's and early 1970's, an abundance of copper drove a growing export economy that in many ways looked industrial and actually brought material advancement to some segments of the Zambian population. Similarly, in certain areas of the United States (e.g. Appalachia), many people still lack access to material comforts that are so prevalent in highly industrialized societies. The point of this comparison, then, is not to suggest that Zambia and the United States are polar opposites, ends of an industrialization continuum. Rather, it is to compare two societies that demonstrate predominately different modes of production (see Marx et al., 1888) in order to explore the relationship between level of industrialization, resource allocation patterns, and ecological and social sustainability.

Theoretical Framework

In comparing resource allocation patterns at different levels of industrialization, the idea of "economic cultures" is a useful tool. The notion of economic culture is a highly contestable one that depends on the notion of culture itself. In general, culture can be conceived as "a complex web of meaning and significance," (Wooten, 2003) composed of values, attitudes, and behaviors among other things. Because of the difficulty in

² An industrialized society, in this context, is one that has transformed its mode of production away from the small-scale, "peasant" mode to one where large-scale resource accumulation (either individual or state sponsored) catalyzes material development. (Marx et al., 1888) In the United States, this accumulation was accomplished through the capitalist mode of production. In other places (most notably Europe), more socialist attempts have been successful. A pre-industrial society, then, is one where the peasant mode of production is predominant.

measuring values and attitudes, however, this project will use behaviors as a proxy while recognizing “culture’s” infinite complexity. Though culture by itself is difficult to define, the concept of economic culture is somewhat easier to pinpoint.

According to Peter Berger, economic culture refers to the “whole set of values, beliefs, practices, and institutions to which distinct economic arrangements give rise.” (in Wiarda 1987, p. 434) Considering this definition, the question is: Does culture give rise to economic arrangements or do economic arrangements give rise to culture? There has been much historical debate over this matter: While Karl Polanyi (2001) supports Berger’s definition by suggesting that the emergence of capitalism changes people’s values, Max Weber thought that “religious interests and cosmology influence and shape concrete actions . . . and even mundane economic behavior.” (Parsons, in Wilk 1996, p.112) Emile Durkheim “submerged economic change within social evolution,” i.e. he believed that values and behaviors were social constructions. (Wilk, 1996, p. 82) Karl Marx thought that institutional power arrangements were at the root of people’s economic behaviors. This project considers that all of these perspectives ultimately play a role in certain contexts, often at the same time. As such, it holds that economic arrangements and culture are actually inseparably connected, an organic double helix of sorts, both evolving with and reacting to the shifts and adjustments of the other.

In order to discuss resource allocation patterns at different levels of industrialization, then, this project will compare an individualistic economic culture (e.g. the United States) with a collectivist economic culture (e.g. Zambia). As in the discussion of levels of industrialization offered above, these dichotomous classifications are not meant to be essentialist, i.e. Zambia and the United States are not polar opposites with respect to economic culture. While Zambians in general may allocate more resources to communal networks than individual ones, and while people in the United States may exhibit the inverse tendency (data in this study suggest this claim), there is no absolute economic culture. People everywhere exhibit all kinds of economic behavior, at times investing in

the self and at times investing in others. The regression models discussed in chapters 2 and 3 confirm this variation as some Zambians are more individualistic than others while some people in the United States are more communal than others. Using these categorical references, then, only provides a starting point that allows us to consider the general relationship between resource allocation patterns and levels of industrialization to see how it impacts social and ecological sustainability.

This comparison will first look at the interplay of industrialization and economic culture. Then, it will consider the role of social capital at different levels of industrialization. More specifically, it will analyze the relationship between level of industrialization, economic culture, social capital, and sustainable development. It will conclude by offering some questions with respect to social capital that will guide the research analysis that follows, as well as the conclusions on the potential of social capital as a catalyst and essential resource for sustainable development.

Collectivist Economic and Individualistic Economic Cultures

The transition from pre-industrial societies to industrialized societies is a much-covered topic (Marx et al., 1888); Polanyi, 2001; Schumpeter, 1942; Wallerstein, 1989). It is essentially the modernization (or industrialization) of societies that includes, among other things, increased levels of commodification³ and urbanization, the rise of the individual, and the adoption of the rational-materialist edict. One of the most fundamental changes in this transition was a shift in resource allocation patterns and the values that drove them.

³ Commodification refers to the process whereby social relationships are transformed into commercial relationships. (Marx et al., 1888) As one of the most prominent features in the development of capitalism and the industrial revolution, it has led to one of the most critical breakdown's in modern society – alienation.

While pre-industrial societies tended to operate on a system of resource sharing that favored the community over the individual, industrialized societies tended to build themselves on a more selfish system of resource distribution: It is argued that the process of industrialization was facilitated by individual capital accumulation. (Hyden, 1983) The more people accumulated individually, the easier it was for them to collect enough capital to invest productively (e.g. building factories, buying raw materials, etc.), and the more the society was able to “industrialize,” at least materially.⁴ Why and how did this transformation occur? One of the biggest reasons has to do with food security and the emergence of market economies.

Origins of Collectivist Economic Culture

Traditional societies⁵ operated on what is termed “peasant economics.” Frank Ellis (1988) suggests that peasant economics has two central themes: 1. family or household production, and 2. only partial (if any) engagement in undeveloped markets. The economic culture derived from this environment in traditional societies was driven most directly by concerns over food security, a security that often depended on factors outside people’s control (e.g. droughts, lack of land, pests eating crops, etc.). Under these conditions, people’s ability to survive became dependent on the willingness of others to share. While *one person’s* crops might have failed one year, *others’ crops* might have succeeded. That one person’s (and his family’s) ability to live that year thus became dependent on these other people’s willingness to appropriate food to him or her. In another year, the situation may have reversed and that one person may have fed others whose crops might have failed. In cultural evolutionary terms then, communities that developed this collectivist economic culture (up until the emergence of capitalism) were

⁴ Development of industries usually requires large quantities of initial capital investment to cover startup costs (land, labor, materials, etc.) before any profit can be reaped. For the most part, this short-term capital need has been provided in industrialized countries through individual capital accumulation.

⁵ The term traditional societies, as used here, refers to indigenous groups of people before their contact with Europeans, and later Americans.

naturally selected to survive famines over those that did not. This ability to rely on each other in times of need was the foundation of traditional societies' moral economies.

The concept of a moral economy (a form of collectivist economic culture) refers to a system of security that guarantees subsistence for its members and drives the economic logic, motives, and behavior of peasants. (Scott, 1976) In the peasant economics example given above, people's economic behaviors were shaped by the need to provide security. If they did not share their food, then when they needed food, it would not have been shared with them and they could have died. Their survival became tied to cooperation and the communal sharing of individual wealth (e.g. agricultural products). Though this did not mean that individuals always shared all of their resources, it did guide a more collective economic culture in traditional contexts.

The Rise of Individualistic Economic Culture

In some ways, one drawback of predominantly collectivist economic cultures in traditional societies was that they did not encourage much individual initiative, innovation, or accumulation of capital. Though they maintained social relationships and ecological resources that likely satisfied some human needs⁶ while sustaining the natural resource base that nourished them, the inability of these societies to develop has often been linked to this inability to accumulate capital. (Hyden, 1983; Berry, 1989)

The history that ferried the transition of industrialized societies from their pre-industrialized, traditional roots is complicated. Among other things, it involved the re-organization of land, labor, and capital through their commodification. (Polanyi, 2001; Marx, 1888) Under this new system of organization, the refinement of markets and a

⁶ "Anthropologist Ralph Linton wrote in *The Study of Man*, 'Every human has the need for companionship and for the reassurance and emotional security which comes from belonging to a social unit whose members share the same ideas and patterns of behaviour.'" (Backgrounder 1996, p. 22)

decreased dependence on family or household production over time transformed peasant economics into market economics. While this shift was composed of a series of much smaller transitions as economic relationships and values slowly changed, at the end of the larger, more systematic shift, this market organization had replaced the moral economy as the new mechanism organizing economic behavior of individuals. Under this new system, security was assured through resource accumulation, not through resource sharing. As sustenance became less dependent on resource sharing and more dependent on individual accumulation, values on communal sharing also shifted. These values spawned a new, individualistic economic culture, which in turn, helped spawn the industrial revolution.

Grounded in Enlightenment values of modernization, individualism and liberalism, the industrial age saw the individualistic economic culture gain increased importance in society. By placing a higher value on resource hoarding than sharing, this new economic culture afforded enough capital accumulation to fuel material development, but unfortunately, did so at the expense of social relationships (e.g. there was arguably an increase in alienation) and excessive natural resource degradation (e.g. pollution was rampant and natural resources have been depleted excessively).

While this very brief overview does not do justice to the full scale of activities that contributed to the rise of individualistic economic cultures, it does provide the backdrop with which to consider modern efforts at sustainable development. To do this, though, we need to understand how the intersection of individualistic economic cultures and collectivist economic cultures operates in today's pre-industrialized societies.

A Modern Collectivist Economic Culture -The Economy of Affection

Economy of affection, a second form of collectivist economic culture,

denotes a network of support, communications and interaction among structurally defined groups connected by blood, kin, community or other affinities, for example, religion. It links together in a systematic fashion a variety of discrete economic and social units which in other regards may be autonomous. In spite of the cellular structure of the production system, household units are co-operating for both productive and reproductive purposes. Because such co-operation, however, is not an inherent and permanent part of the production system, it tends to be *ad hoc* and informal rather than regular and formalized . . . Its functional purposes can be divided into three principal categories: (1) basic survival; (2) social maintenance; and (3) development. (Hyden 1983, p. 8-9, 11)

Having evolved from traditional roots, an economy of affection, like a moral economy, also favors investment in social networks over individual accumulation to ensure security. Its departure from a moral economy is that it recognizes the agency of the people involved. Formerly, the context of communal resource allocation was peasant economics and a primary motivation to work was to fortify social networks that offered security. Today, however, market economics are fairly widespread and the motivation to work is influenced by a desire for material goods. Under economies of affection, then, people have a choice where they invest their resources – they can invest in informal networks in the same manner as traditional societies or they can accumulate capital to have access to material goods. As Sara Berry (1983) and Goran Hyden (1989) explain, people in pre-industrial countries frequently choose to invest them in the informal networks of community.

At some levels, “economies of affection are an intermediary point between moral and industrialized (i.e. market) economies, representing a compromise between the individuation and selfishness that characterize industrialized societies and the high level of traditionally defined reciprocity and sharing” associated with traditional societies. (Galvan, 2003) Whether they can improve material well being through capital

accumulation is debatable,⁷ but their ability to maintain social relationships through community investment seems high and favors ecological sustainability by decreasing the net personal resources available for individual consumption (and the natural resource depletion that it entails).

Considering that development is facilitated most directly by the accumulation of capital and the mobilization of people, the question for sustainability may be this: How can elements of a collectivist economic cultures like economy of affection be exploited or promoted for development? Can networks of *economy of affection*-like resource sharing be tapped into for community mobilization? And if so, can they achieve the benefits of industrialization without incurring the social and ecological costs associated with individuated societies? Is sustainable development possible without large-scale capital accumulation?

To help answer these questions, we next turn to explore the link between economic culture, social capital, and sustainability.

Social Capital

A society characterized by generalized reciprocity⁸ is more efficient than a distrustful society, for the same reason that money is more efficient than barter. If we don't have to balance every exchange instantly, we can get a lot more accomplished. Trustworthiness lubricates social life.

⁷ Goran Hyden (1983) argues that economies of affection prevent Africa countries from developing for several reasons relating to capital accumulation: 1. because the informal transactions of economy of affection ignore government, they decrease its ability to raise enough capital (e.g. through taxes) for national development, 2. The demands of the economy of affection on personal resources preclude individuals from accumulating enough capital to fuel development from a private sector.

Sara Berry (1989) argues similarly, claiming that even Africans who are able to accumulate capital tend to invest in social institutional networks, even at the cost of decreased production, to secure social footing.

⁸ Generalized reciprocity refers to a system of exchange where a favor done on behalf of someone else does not expect immediate return. In fact, in a communal sense, the favor will not necessarily be returned by the receiver of that favor, but may be returned by another person. Thus, a cycle of give and take may occur as people help each other satisfy needs but without immediate payback.

Robert Putnam (2000, p. 21) was not alluding directly to “economies of affection” (an Africanist idea, in origin) when he wrote this observation; he was talking about social capital.

Essentially, social capital “refers to connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them.” (Putnam 2000, p. 19) It is the willingness of people to trust, associate, and volunteer; the willingness of individuals to engage in community activities and civic duty (such as voting or jury duty in the US). When people associate by joining clubs, donate time to help a neighbor, or have regular potlucks, social capital is created because relationships and trust are built.

Instead of following econometric logic (a prominent theory in individualistic economic cultures), it defies the economic principles of scarcity and individual-rational utility maximization. (Fukuyama, 1995, cited in Wilson, 1997; Galvan, 2002) With social capital, the more you have of it, the more valuable it is. (Galvan, 2002; Putnam, 2000; Wilson, 1997) For example, the more people you have volunteering to help you clean out your garage, the easier the job is and in general, the more fun it is also. This point is crucial for understanding how industrialization affects social sustainability because econometric logic in the 21st century seems to govern much of the thinking that drives predominantly individualistic economic cultures in industrialized countries. If this element of social capital proves valid and useful, it may suggest a need to reconsider econometric, rational utility maximization theory, and by default, individualistic economic culture. Here, not only does investing in others improve social relationships and accomplish tasks more expediently while investing in one’s self does not, the potential return on this investment might be even greater by doing so!!

Of interest to this project, then, is the role that social capital plays at different levels of industrialization, especially with respect to sustainable development. Despite its relative abundance in the United States’ early days, to the extent that it provoked Alexander De

Toqueville to observe in 1835 a “propensity for individuals to join together to address mutual needs and to pursue common interests” (in Wilson 1997, p. 746), it has steadily declined over the last half-century. (Costa et al, 2003; Putnam, 2000) Numerous explanations account for this decline: Bellah et al (Wilson 1997, p. 746) suggest that it reflects “the rise of deeply ingrained individualism concomitant with advanced industrial society.” Costa and Kahn suggest that the “main culprit [of this decline] is growing income inequality in communities,” (Koretz 2001, p. 30) which was, in 1994, “greater than at any time in the previous 50 years.” (-- 1994, p. 19)

While the term social capital originated with analyses of its decline in industrialized societies (where individualistic economic cultures are prominent), we have already seen that a willingness to collaborate, associate, and invest in others was a vital element of pre-industrial societies. Surprisingly then, analyses of social capital have rarely been applied to settings where collectivist economic cultures are prevalent. Though social capital has been primarily discussed in terms of civic engagement in industrialized societies, Goran Hyden (2001, p. 161) argues that this is

both ethnocentric and misleading for policy or governance purposes. *Social capital*, being manifest in the presence of trust and the existence of *social* networks and operationalized in collective action, which implies the confidence in sharing information and risks with others, may arise for reasons other than those associated with solving public problems arising from the competitive private interests of autonomous individuals, which is the prevailing assumption of the rational choice-based theory that now dominates the literature. There are at least three other reasons for the formation of *social capital* if the concern is analyzing its role in developing country contexts. The first is class solidarity growing out of a common sense of being exploited. This has historically been viewed as a cause for collective action. The second is the “moral economy” argument put forward by James Scott: people whose traditional values are being threatened by modernization get together to defend these values. The third is cooperation that emanates from the presence of strong communal ties, which help foster the development of a para-public realm, often in conflict with the norms underpinning the civic public realm. In short, there are several competing currencies of social capital that influence people's readiness to engage in collective action.

The parallels with collectivist economic cultures in Hyden's second and third type of social capital are stark: In societies exhibiting these cultures, the prevalence of resource sharing seems to create "strong communal ties" which then lead to "cooperation." In fact, the availability of this type of social capital in pre-industrial societies, where collectivist economic cultures are most prevalent, seems abundant.

In this study, Zambia provides an excellent example of a pre-industrial society where social capital seems to be high *prima facie*. Despite a lack of statistics, personal experience⁹ suggests that Zambians are active in supporting their communities: There, people visit each other frequently and without advanced notice. Distant relatives can come to visit and may end up staying indefinitely (at the expense of the person being visited!!). Marriages and funerals are communal events where attendance is frequently expected instead of invited. The idea that someone would not know his or her neighbor is ludicrous. If people need something for their house (salt, sugar, cornmeal, etc.) that they cannot afford, they ask their neighbors who regularly give the needed item.

These brief analyses of social capital in the United States and Zambia, then, seem to suggest an interesting relationship among levels of industrialization, economic culture, economic capital, and social capital: At low levels of industrialization, where collectivist economic cultures are more prevalent, it appears that high levels of social capital accompany low levels of economic capital, while at high levels of industrialization, where individualistic economic cultures predominate, the inverse seems true.

The hypotheses outlined in the introduction of this chapter suggest that resource allocation patterns (which vary according to the influences of economic culture) drive this tradeoff and are critical for understanding social and ecological sustainability. Considering these relationships, the question for sustainable development is how do resource allocation patterns at different levels of industrialization affect the tradeoff of

⁹ I worked and lived in Zambia from January 2000 to July 2001.

social and economic capital? And how can this tradeoff be harnessed to improve ecological and social well being while still offering material welfare? Can social capital provide a beacon for sustainable development in this puzzle?

Apparently, one mechanism of the industrialization process is to trade social capital for economic capital. In order to do this, though, it must shift the combination of economic cultural values that create and maintain high levels of social capital in pre-industrial societies. As the economic cultural pendulum swings from more collectivist values to more individualistic values, this reserve of social capital can apparently be traded in for economic capital and material development at the expense of social and ecological sustainability. When individuals begin to consume the earth's natural resources for themselves, the supply of these resources diminishes considerably, in some cases to zero. Similarly, as trust in others becomes diluted and people associate less and less, societies suffer the consequences. Is there a middle ground where societies can encourage enough individualism to promote essential material development, but where it retains enough collectivism to support social and ecological sustainability? And if so, how do we get there?

While industrialization has shown us the potential of economic capital as a tool for material development, we have still to explore the utility of social capital. There are many questions surrounding its availability and usefulness at different levels of industrialization: While it appears to be abundant in pre-industrial societies, the question remains, can it be tapped to promote sustainable development there? Considering the will of people to improve their lives, the answer appears to be yes. The key questions in these contexts, then, are: how can existing social capital be used to mobilize communities, and then, can these communities access outside sources of capital? In industrialized societies, where social capital is scarcer, the question seems to be, can it be created to promote social and ecological sustainability? Considering that all industrial societies were at one time pre-industrial (and presumably had higher levels of social

capital), the potential to (re-) generate higher social capital levels seems high, but the question is how?

Conclusion

Data gathered in this project attempt to explore the role that resource allocation plays in the tradeoff of economic and social capital at different levels of industrialization, and to understand how these relationships affect ecological and social sustainability. In the next chapter, I will use data to look at sustainability as a function of levels of industrialization in the two case studies, Zambia and the United States. In chapter 3, then, I will analyze data for each country separately in order to see what factors influence sustainability at different levels of industrialization. It is out of these analyses that I will be able to answer the above questions regarding economic culture, social capital, and sustainability in chapter 4.

CHAPTER II

RESULTS – ALL SUBJECTS IN ZAMBIA AND OREGON

As seen in Chapter I, the sustainable development debate has thus far been an exercise in rhetoric. It has most often played out between those that would like to see sustained improvement in people's economic well being with those that would like to see a sustained decrease in people's impact on the natural environment. A third, less powerful voice in this debate, would like to see heterogeneous social and cultural values (e.g. the mechanisms different societies have to maintain social relationships as discussed in Chapter I) sustained. While there are many indicators that attempt to measure improvement in people's economic well being - e.g. the GDP (see Appendix 1 for a discussion of these indicators) - there are fewer that measure people's impact on the environment, and fewer still that look at the maintenance of social and cultural systems. One failing of the debate, then, has been to provide enough concrete evidence on all sides to provide a balanced discussion. In the past, the improvement of people's well being dominated the field because there was so much more evidence of the disparity between rich and poor. It is only more recently that research has begun to show the ecological and socio-cultural impacts of the "development" process itself.

The purpose of this study, then, is to add to the growing body of literature evaluating the socio-cultural and ecological impact of development by looking at a "developing, pre-industrial" country, Zambia, and a "developed, industrialized" country, the United States, to see how they compare on issues of sustainability. Does level of industrialization impact sustainability? And if so, how? Is sustainability, as the core hypotheses of this project suggest, a function of differences in how resources are allocated? If so, why? What is it about resource allocation patterns that impact sustainability (either ecological or social) at different levels of industrialization? Are there lessons from one level that are

applicable to another and vice versa? These are just some of the questions that this project seeks to answer.

In this chapter, I use survey data to explore the relationships between levels of sustainability and a host of ordinary indicators including age, gender, household size, resource allocation patterns (to the community or the individual), notions of community, wealth, and political and religious activity. As we shall see, the data suggest that less industrialized societies are more ecologically sustainable than more industrialized ones. We shall also see that data surrounding social sustainability offered conflicting evidence about the impact of industrialization; but that conclusions drawn in this study do suggest that the same relationship holds true with lower levels of industrialization seeming to increase social sustainability. In both cases, the data suggest that patterns of resource allocation are enormously important. Though the data support the division between “first world” and “third world,” other findings, such as the resource allocation one, demand a more detailed analysis. Most importantly, they demand an answer to the following question: What about a person living in a more industrialized country makes them less sustainable than a person living in a less industrialized country? In the following chapter, then, we will look at what influences sustainability in each country.

Outline of Case Studies

The data presented in this chapter stem from two, parallel, 42-question surveys posed to two sample groups – one in Zambia and one in the United States.¹⁰ The cities of Salem, OR and Solwezi, Zambia were selected based on the fact that they are both regional capitals in their countries -- Salem is the capital of Oregon in the USA and Solwezi is the capital of Northwestern Province in Zambia -- and thus had similar population dynamics

¹⁰ The two surveys were parallel in that they asked the same informational questions using appropriate examples for each culture. For example, in Zambia, one of the questions, aimed at capturing community versus individual resource allocation, asked respondents to allocate a sum of money to either buying a bicycle or paying for a funeral. This same question in the US gave the choices of either purchasing a new electronic device or giving money for a neighborhood park project.

(e.g. both had transitory populations due to hosting regional and national civil servants). Throughout this analysis, the case study of Solwezi, Zambia is referred to as “Zambia” and represents a pre-industrial, less commodified society where the a collectivist economic culture predominates; the Salem, Oregon case study is referred to as “Oregon” and represents a commodified, industrial society where an individualistic economic culture is more common. While there are certainly elements of an individualistic economic culture in the Zambian case study and elements of collectivist economic culture in the Oregon case study, these classifications are indicated for a general comparison between the two.

The Zambian surveys were conducted during the month of July 2002 with the assistance of a Zambian researcher. The 160 respondents in Solwezi, Zambia were selected through a randomized, sampling from among the approximately 15,000 inhabitants of Solwezi and its surrounding area. Out of an initial target sample of 200 individuals, 160 surveys were completed, a response rate of 80%.

This sample was selected in several ways. First, visits were made to a number of Solwezi civil service offices (e.g. the police station, the fisheries department, the bureau of housing and planning, etc.) where employees were asked to fill out the survey. These surveys were dropped off and the researcher returned at a later time to retrieve them. A second strategy of data gathering was to interview people in the market. A third strategy was to walk around in compounds (i.e. neighborhoods) and drop off surveys at people’s homes to be retrieved later. The last strategy for gathering data was to visit a nearby village and interview some of its residents. This group of 14 respondents composed the “rural” respondents in Zambia while the other 146 respondents were considered “urban.” Time and transportation limitations prevented the researcher from attaining a larger rural sample.

Surveys in the United States were conducted in November and December of 2002 through a mail survey. The 214 respondents in Salem, Oregon (USA) were selected through randomized sampling (2 addresses were taken from each page of the Salem, OR phone book) from among the approximately 100,000 inhabitants of Salem and its surrounding area. Out of the initial mailing to 635 respondents, a total of 214 completed surveys were returned, a response rate of 35.7%. Despite the fact that PRA (2001) reported that response rates of 50-70% are common, Dillman (2000) offers that response rates are a more complex function of, among other things, number of mailings, presentation and content of materials, inclusion of a reward (e.g. 2-10\$), etc. Considering the economic and time limits of this project, the 35.7% response rate was considered to be reasonably successful.

This data was gathered through a series of three mailings. First, I mailed an introduction card. Three weeks later, I mailed a first survey and then, after four more weeks, I mailed a second survey to those who had not yet responded. Out of the 214 respondents in the Salem sample, 30 were considered "rural," and the other 184 were considered "urban." A respondent was considered rural if they were listed in the Salem phone book but were not in the Salem city limits. In later reviewing the demographics of the area, this selection criteria was considered faulty as some of the surrounding towns had high populations and were likely just as "urban" as Salem. However, considering that the rural population sample was already small, the decision was made to maintain the criteria in order to have a larger rural sample. Clearly, further research is needed to see the effects of living in urban or rural contexts in the United States.

Explanation of Variables

Raw data from the surveys discussed above analyze the dependence of both ecological and social sustainability on the list of socioeconomic indicators found in Table 1. In

some cases, these indicators are indices that were created using one or multiple questions from the surveys (see Appendix 2 for detailed description of each index' composition).

Table 1. Overview of Independent Variables

Variable	Type	Description
Rural versus urban residence	Categorical 1-2	urban = 1, rural = 2
Gender	Categorical 1-2	male = 1, female = 2
Level of industrialization	Categorical 1-2	Zambia = 1, Oregon = 2 Zambia was considered less industrialized than the United States
Age	Categorical 1-4	Categories: 1) 18-35 years old 2) 36-50 years old 3) 51-65 years old 4) over 65 years old
Household size	Scalar 1-7	Measured as Number of People in a Respondents Household
Level of political activity -	Scalar 0-100 [standardized score]	Political activity based on following indicator: 1) How often a respondent helped out at a political organization, meeting, or rally each month.
Level of religious activity –	Scalar 0-100 [standardized score]	Religious activity based on following indicator: 1) How often a respondent helped out at a church or other religious organization each month
Communal – Individual Investment Index.	Index 0-100 [standardized score]	Index of community versus individual investment based on following indicators: 1) How much of a given sum a respondent would invest in a communal good or an individual good 2) How many times per month a respondent would volunteer their time to a communal task each month (<u>two questions</u>) 3) How many times per month a respondent would do something for themselves each month (one question) 4) How many times per month a respondent would buy something for themselves each month (one question) 5) How many hours per month a respondent spent doing community or volunteer work each month (one question)

		6) How many hours per month a respondent spent doing something for themselves each month (one question) 7) Whether a respondent would choose to spend time on a communal event or an individual event. (one question)
Wealth	Index 1-100 [standardized score]	Index of material wealth based on following indicators: 1) House size in Oregon 2) House size and availability of electricity in Zambia

Ecological Sustainability Index

The broad purpose of this index is to compare the ecological impact of each country's people against the host of independent variables outlined in Table 1 to see if different levels of industrialization, in fact, do have different impacts on the earth's ability to sustain itself, and if so, why? In other words, what makes a more industrialized people more or less ecologically sustainable than a less industrialized one?

The ecological sustainability index in this study (see Appendix 2 for a detailed explanation of the construction of this index), then, attempts to measure the ecological impact of respondents' consumption and lifestyle choices in two countries with radically different levels of industrialization, cultures, and social norms. The justification for using consumption as an indicator of ecological sustainability is based on the premise that when humans consume material goods, natural resources are consumed and depleted; and as defined in chapter 1, one of the principle components of ecological sustainability is this resource depletion.¹¹ The Index was composed of the following four questions related to people's transportation and food consumption¹²:

¹¹ See Appendix 1 for a fuller discussion of ecological sustainability.

¹² The Ecological Sustainability Index was created following model of the Ecological Footprint engine created by Redefining Progress, a San Francisco based think tank that addresses, among other things, the ecological impact of individual lifestyle choices. The Ecological Footprint is a web-based engine

1. How much of the food a respondent ate was “packaged, processed, or not locally grown?”
2. How often did a respondent use non-motorized transportation to get around (on foot, a bicycle, or animal power)?
3. How many hours per year did a respondent fly in an airplane?
4. How far each week did a respondent go by car?

The use of these transportation and food questions, while not capturing the full range of people’s consumption of the earth’s resources, was considered an excellent proxy to compare different people’s consumption behaviors because they are fundamental, daily activities - issues which matter to people regardless of level of industrialization. It would make much less sense to compare two people’s material goods consumption because some people may not consume material goods, but everyone eats and moves. The following comparison can illustrate the applicability of these two consumption categories: 1. a person who flies 0 hours per year, chooses walking as their primary mode of transportation (i.e. they drive less than 5 miles per week or 260 miles per year, thus consuming less energy), and who eats all their produce from their own garden which only used natural pesticides and rainwater naturally has a small impact on the earth’s natural resources when compared to, 2. a person who flies 120 hours per month (thus consuming airplane fuel and all the disposable utensils et al distributed in airplanes), drives their car 100 miles per week (i.e. 5,200 miles per year) which consumes large quantities of energy, and who buys all of their food from a grocery store that 1. uses lots of energy to first process the food, 2. uses disposable packaging materials to present and sell it, 3. uses more energy to truck or fly the food to the grocery store from its production site and 4. uses even more energy to store it (e.g. refrigeration). In the above example, the first

allowing individuals to answer a series of questions about their lifestyles and receive feedback about how their lifestyles impact the environment. As discussed in Chapter 1, Redefining Progress also developed the Genuine Progress Indicator (an alternative to the GDP) to measure a country’s development. Their website is www.rprogress.org.

person would score one hundred on our ecological sustainability index while the second would score a zero.

Social Sustainability

The broad purpose of measuring social sustainability against the host of independent variables outlined in Table 1 was to see if different levels of industrialization do impact people's ability to build and maintain the relationships (i.e. create the social capital) necessary for a healthy society, and if so, why? In other words, what factors influence social sustainability as a country becomes more industrialized?

This is important because while the material benefits of industrialization have improved human lives enormously, the process of industrialization itself, as outlined in chapter 1, seems to have created feelings of alienation in industrialized societies (Dimitrova, 1994). For example, though modern medicine has reduced the sickness and suffering of many, the workaholic culture (an outcome of individualistic economic culture) that has driven much of the research that leads to drug development, has also left many people in modern society feeling disconnected. This paradox of having at once improved human life quality and then diminished it, demands attention.

The goal of this project, then, is to measure levels of social sustainability at different levels of industrialization in order to better understand the relationship between the industrialization process and social alienation (i.e. unsustainability). If, as the core hypothesis suggests, social sustainability varies at different levels of industrialization as a function of resource allocation, then this information can help instruct national and international policy making.

Discussions about social sustainability in this study were actually based on results from two different measures: one assessing respondents' perceptions of other people's

happiness – the “Perceived Happiness Indicator” - and the other an index assessing respondents’ perceptions of safety – the “Perceived Safety Index” (see discussions of these two indices below). Together, these gauges were aimed at measuring how sustainable people’s societal and personal relationships were. While they may not necessarily capture the full range of issues surrounding social sustainability (for example, they do not measure the relationship between family or community health with societal well being), in this project I considered them to be good proxies because, in light of the alienation discussion above, they seem to represent good counterpoints. For example, intuition suggests that a person who feels alienated or disconnected would not describe themselves as happy. Further, a society where people fear for their safety does not sound like one where healthy relationships flourish between people. Thus, this project deemed a country where respondents expressed high levels of “perceived happiness” (i.e. attributed perceptions of happiness to others) and high levels of “perceived safety” (i.e. felt safe themselves and/or attributed perceptions of safety to others) to be more socially sustainable than one where respondents expressed low levels of “perceived happiness” or “perceived safety.”

The Perceived Happiness Indicator was composed using the following question (see Appendix 2 for a more detailed explanation of the composition of this indicator):

In general, are people in your community . .

- A. happy with their lives?
- B. unhappy with their lives?

While admittedly this indicator was somewhat limited because it provided a dichotomous option in answering only one question, it did offer the opportunity for respondents to assess the general happiness in their communities without risk of errors in self-reporting. Time and resource constraints prevented adding additional “perceived happiness” questions to the surveys.

The Perceived Safety Index was composed of the following three questions (see Appendix 2 for a more detailed explanation of the construction of this index):

1. Do you feel safe in your community? Yes or No
2. In general, do people in your community feel safe? Yes or No
3. Are you surprised to hear about a murder in your community? Yes or No

While again, this index was limited due to the dichotomous options for answering each question, it improved on the Perceived Happiness Indicator by providing an opportunity for people to offer perceptions of their own safety, yet at the same time give an assessment of other people's perceptions of safety, thus avoiding risks of errors in self-reporting. In addition, it gave respondents the opportunity to answer a question measuring people's perceptions of safety indirectly, again avoiding risks of errors in self-reporting.

A potential reporting bias may have occurred in the Zambian sample with respect to the season the survey was implemented. The survey in Zambia was carried out during the long dry season (known locally as the hunger season), the most difficult time of year with respect to food security. During the long dry season, though people may have enough food for their immediate family, when they receive more distant family members or visitors, this food can become insufficient and their families may go hungry. If the Zambian survey had been carried out during another season, responses may have reflected greater perceptions of happiness and safety associated with food security.

Community / Individual Investment Index

The core hypothesis in this project was that the way personal resources (both time and money) are allocated affects both social and ecological sustainability. Further, it proposed that in industrialized countries, a predominantly individualistic economic culture would decrease social and ecological sustainability whereas in less industrialized

countries, a predominantly collectivist economic culture would increase social and ecological sustainability. While other resource allocation tradeoffs surely influence ecological (and perhaps social) sustainability (for example, a person who saves money instead of spending it likely impacts the environment less than a person who spends all their income¹³), the individual/community tradeoff was considered the best proxy to capture differences in resource allocation across all levels of industrialization. In any case, to test the core hypothesis, a tool was needed to operationally measure the behavioral differences between collectivist and individualistic economic cultures.

The Community/Individual Investment Index¹⁴ was composed of a number of questions that asked respondents either:

1. how often (a measure of the investment of time) they did certain communal (e.g. volunteering) or individual (e.g. getting a haircut) activities,¹⁵
2. how much money (a measure of financial investment) they allocated to communal (e.g. donating to a community project or activity) or individual (e.g. buying a good for one's self) goods.

The higher a respondent scored, the more he/she chose to allocate resources to the community. Quantitatively, then, a score of 100 meant that a person chose to allocate 100% of their resources (both time and money) to a communal good and 0 % of their resources (both time and money) to an individual good. Conversely, a score of 0 meant that the respondent chose to invest 100% of their resources (both time and money) to an individual good and 0% of these same resources (both time and money) to a communal

¹³ Though this project did not test ecological sustainability against the savings/spending tradeoff in places where wealth was not a predictor of ecological sustainability, this supplemental research may provide further insights into the role of resource allocation in sustainability.

¹⁴ See Appendix 2 for a more detailed explanation of the construction of this index

¹⁵ Surveys for Zambia and the United States measured communal and individual resource allocation using different, culturally appropriate proxies. To see the full range of questions utilized in this index, refer to the Surveys in Appendix 4.

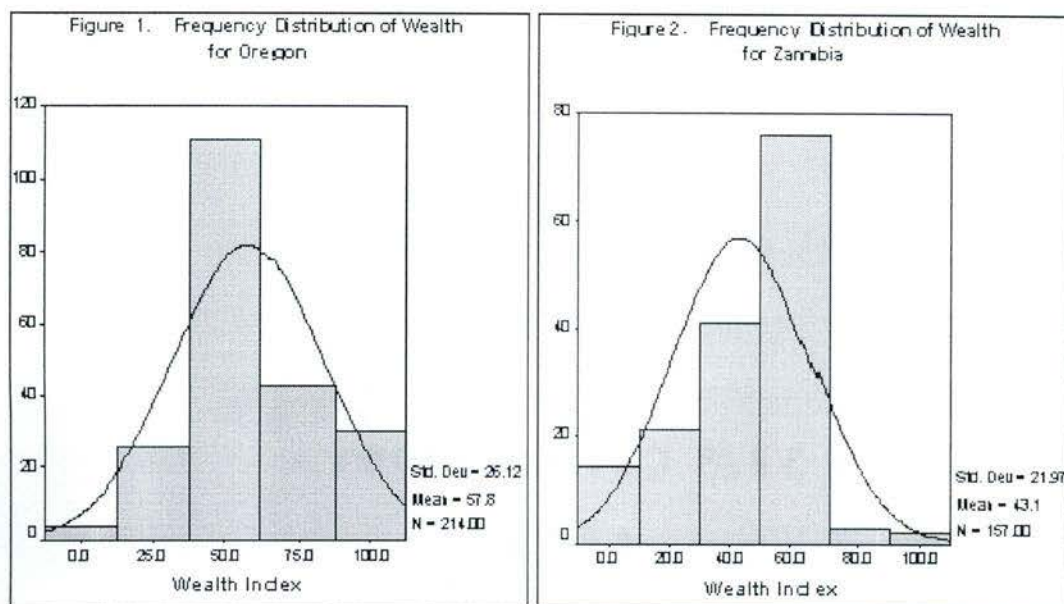
good. A score of 50 meant the resources (both time and money) were allocated evenly between the community and the individual.¹⁶

Wealth Index

Considering the vast differences of wealth between the two case studies (as seen in Chapter 1, Zambia's GDP was exponentially lower than that of the United States), a Wealth Index was created to see the effects that wealth would have on respondents' levels of social and ecological sustainability (see Appendix 2 for a more detailed explanation of the construction of this index).

Two variables contributed to the wealth index – in the Zambia, house size and availability of electricity was used while in the US only house size was used. The nature of this index did not allow direct comparisons between the two countries (the wealth scores were not standardized), but Figures 1 and 2 do reveal the relative distribution of wealth in each sample.

¹⁶ In the analyses that follow, references to "resource allocation to the self" are used interchangeably with references to "resource allocation to the individual." Also, references to "community investment" are used interchangeably with references to "community resource allocation" while references to "individual investment" are used interchangeably with references to "individual resource allocation."



Though the standard deviation in both Oregon and Zambia were similar, the distribution in Zambia showed a large percentage of people in the same wealth category. Considering that most of the sample was urban, this would suggest that the sample was slightly skewed toward educated people with access to wealth.

Ecological Sustainability

The largest problems facing ecological sustainability today are not, as some would portray it (Hardin, 1974), solely problems of development in the South, resulting from overpopulation and poverty. Rather, as the data gathered for this project suggest, they vary in part according to economic well being and resource allocation patterns, in both the North and South. In this section, I will look at ecological sustainability for all respondents in Zambia and Oregon against the host of socio-economic variables discussed above (see Table 1) in order to explore how economic well being and resource allocation patterns drive ecologic sustainability across both countries.

The regression model in Table 2 helps us disaggregate the relative impact of each variable on ecological sustainability. Among all respondents in Zambia and Oregon, ecological sustainability was positively influenced by four factors: living in a less industrialized country – Zambians were more ecologically sustainable than Oregonians, being poorer, allocating resources to the community over the individual, and being a woman – women's responses reflected greater levels of ecological sustainability than those of men.

Table 2. Regression of Ecological Sustainability Against All Variables for All Respondents¹⁷

[n= 250, multiple R²= 0.421]

DEP VARIABLE

Ecological Sustainability – all respondents

<u>INDEP VARIABLE</u>	<u>Beta</u>	<u>P</u>
Level of Industrialization	-0.514	0.000**
Wealth	-0.219	0.000**
Gender (positive β correlates with being female)	0.118	0.019**
Community vs Individual Resource Allocation	0.123	0.035**
Age	0.081	0.150

** very significant, * mildly significant, ° loosely significant

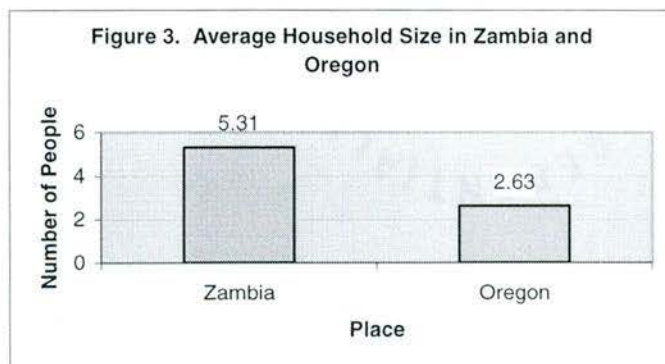
The first two of these four findings offer strong evidence that poverty and low levels of industrialization do affect the environment, BUT in this case, positively. The fact that Zambians were more ecologically sustainable than Oregonians suggests that living in a less industrialized country increases ecological sustainability. In other words, people who live in wealthy countries, with more access to goods, services and infrastructure, have a negative impact on the environment when compared to people living in poorer countries. The fact that wealthy people were less ecologically sustainable than poor people suggests that wealth at the individual level – regardless of country - is also important. Thus, wealth's effects on ecological sustainability seem to operate on two

¹⁷ For all regression models used in this study, the dependent variable was first run against all independent variables. From these results, all independent variables with a 0.15 P value or lower were kept while those with a P-value of greater than 0.15 were discarded. The dependent variable was then run again against the variables that were kept. The results from this second regression model are reported.

scales – the national and the individual. In other words, living in a poor country and/or being poor improve a person's ecological sustainability while living in a rich country and/or being rich negatively impacts a person's ecological sustainability. These findings seem to support the core hypothesis (presented in Chapter 1) that less industrialized countries are more ecologically sustainable than more industrialized ones. The question is: why?

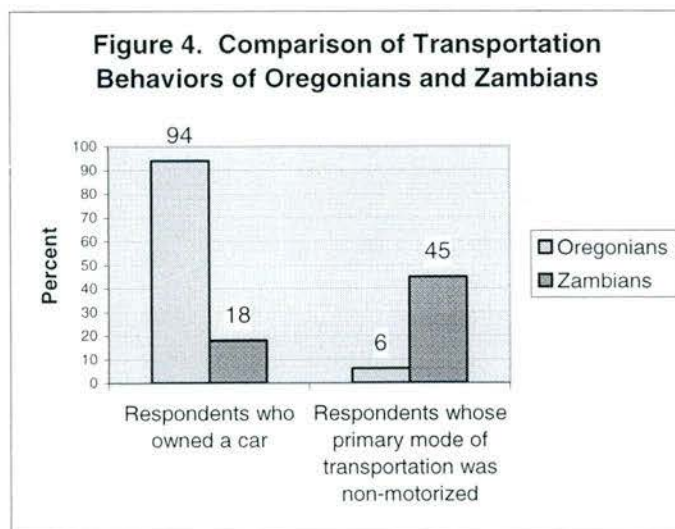
Because ecological sustainability was measured as a function of natural resource consumption, the fact that Oregonians are less ecologically sustainable than Zambians ($\beta = -0.514$, $P = 0.000$, see Table 2) suggests that living in a more industrialized society increases your consumption of natural resources. In support of this argument, Goldemberg (1995) found that in 1993, 75% of the world's population, living in less industrialized countries, accounted for about 30% of the world's energy consumption, while 25% of the world's population, living in industrialized countries, accounted for 70% of the world's energy consumption. In explaining this disparity, it appears that the way industrialized societies are designed actually demands this energy consumption. Two simple examples can illustrate this point:

1. The development of suburban sprawl in the United States has distanced many people's homes from commercial areas requiring them to use motorized transportation to arrive at work or to shop for food, thus consuming fossil fuels. While this transportation dynamic also exists in urban areas of Zambia, the scale is different. First, there are many fewer urban areas in Zambia than in the United States. Second, the population density in Zambian dwellings is much higher than in those in the United States (in this study, average household size in Zambia was 5.3 people per household whereas in the Oregon it was 2.6 people – see Figure 3 on the next page) such that in Zambia more people live in a smaller area. This concentration decreases the sprawl effect and maintains shorter distances from homes to workplaces, thus



requiring less fossil fuel burning transportation. Third, the average Zambian uses either alternative (foot) or public transportation whereas

the average Oregonian uses a private vehicle (see Figure 4): In this study, over 94 % of Oregonians owned a car and less than 6 % reportedly used non-motorized transportation (either walking, bicycle or animal power) to get around “most of the time.” In contrast, less than 18 % of Zambians owned a car while over 45 % used non-motorized transportation (either walking, bicycling, or animal power) to get around “most of the time.”¹⁸



2. An average

Oregonian buys

most of his or her food from a grocery store (in this study, more than 72% of Oregonians said that at least “half” of the food they eat is “processed, packaged, or not locally grown – from over 200 miles away”). By the time

¹⁸ Car ownership was calculated using the following question: If you own a car, how many miles per gallon [km per liter for Zambians] does your car get? Zambians who answered “Don’t own a car” were reported as not owning a car. All others Zambians were considered to own a car. For Americans, because “Don’t own a car” was not one of the responses, only Americans who reported mileage for their car were reported as owning a car. Americans who did not respond to this question were considered to not own a car.

this food arrives on the grocery store's shelf for purchase it has usually consumed large quantities of energy – e.g. many fruits are grown outside the United States (in South America and around the world) and flown in for consumption, even when out of season. Your average Zambian, however, buys most of their food at an open-air market (over 48.1% of Zambians reported that one quarter or less of their food was “processed, packaged and not locally grown – from over 350 km [206 miles] away.” Much of this food is grown locally or comes from within Zambia, thus consuming less energy to bring it to market. When fruits are out of season, they are unavailable.

As we see in these examples, simply getting to and from work and eating in Oregon demands that a person depletes more natural resources (in the examples above, energy for transportation; energy, water and soil fertility for food production) than if they lived in Zambia. This resource consumption has a negative impact on the environment - e.g. burning of fossil fuels affects air quality; large-scale industrial food production, as found in the US, depletes water resources and soil fertility and consumes energy for its transportation; etc. These two examples illustrate the impact of level of industrialization on a country's ecological sustainability.

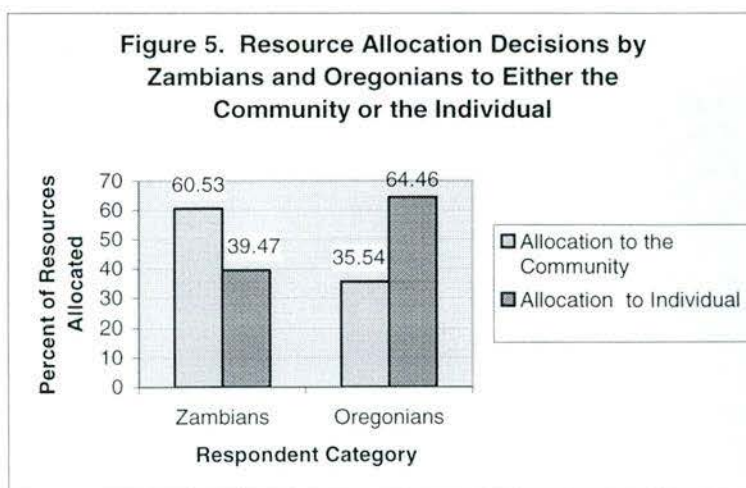
The impact of individual wealth on ecological sustainability was also significant for all respondents in Zambia and Oregon. Poor respondents scored higher on the ecological sustainability index than wealthy ones (β for wealth index = -0.219, $P = 0.000$). Because ecological sustainability was measured as a function of certain consumption behaviors of a respondent, this relationship is not a surprise. The more financial resources a person has, the greater his or her opportunity to consume goods and services (which impacts their individual ecological sustainability), no matter where they live. Despite the fact that Zambians are poorer than Americans (GDP per capita in Zambia in 1999 was \$756 while in the United States it was \$31,872: UN, 2001), this finding suggests that mean national wealth is not the only thing that matters for ecological sustainability but that personal

wealth, relative to the context a person lives in, is also important. The question, is, given that personal wealth is important for ecological sustainability, does it play a different role in a less industrialized country than in a more industrialized one?

One hypothesis would hold that, as a country industrializes, the ability of its citizens to satisfy survival needs becomes less dependent on economic factors, because most people have decent paying jobs and access to goods and services that help them fulfill these needs. Because these survival needs are easy to satisfy, consumption behavior (which is tied to ecological sustainability because the more one consumes, the less sustainable his or her lifestyle is) becomes a function of choice. For a person who is struggling to satisfy survival needs (because they are poor and/or live in a less industrialized country) most, if not all, of their resources are used to consume goods for the purpose of feeding and sheltering their family. Here, consumption behaviors (and thus ecological sustainability) of the majority of the population vary as a function of the amount of economic resources available, not as a function of choices. Whereas in the industrialized context, the addition of more economic resources does not necessarily increase consumption, here, it does.

It appears, then, that the interplay of wealth and industrialization may impact people's ability to choose what they consume, and that this choice opens the door for people to consume more than their share of resources, which decreases ecological sustainability. In other words, a person who has more disposable resources (by being wealthy) can consume more, but so does a person who has more consumable goods at his disposal (e.g. by living in an industrialized country). If this hypothesis holds true, then we might expect ecological sustainability in Zambia to vary according to the availability of economic capital (because the ability to consume may be driven by economic factors) but not in Oregon (where an abundance of economic capital introduces choice as the key factor determining consumption behaviors). Clearly the answers to these questions will require a separate analysis of each country to see what determines ecological sustainability in each case. This analysis will be undertaken in chapter 3.

While the availability of wealth was an important factor in determining an individual's ecological sustainability, how this wealth was used was also significant: Choosing to allocate resources (both time and money) to communal needs over individual ones increased a respondent's ecological sustainability ($\beta = 0.123$, $P = 0.035$ – see Table 2). In other words, as a respondent spent more time and money on others and less on themselves, their personal consumption (i.e. the amount of natural resources they consumed for personal use) decreased, and as consequence their ecological sustainability increased. When we consider that Zambians allocated more of their resources to the community while Oregonians allocated more of theirs to the individual (see Figure 5), this data supports the initial finding that a decrease in level of industrialization increased ecological sustainability.



The question for this project is: if investment decisions are important determinants of ecological sustainability across all respondents, what accounts for the disparity between levels of community investment of Zambians as compared to Oregonians? Is it simply a case of the industrialization process trading in social capital for economic capital, shifting economic cultural values from collective to individualistic ones? Or does community investment in a more industrialized country mean something different than it does in a less industrialized one? These questions will be taken up in chapter 3 again, but considering the above findings, it is worth noting a couple of observations as to why Zambians' and Oregonians' investment patterns are so disparate.

One hypothesis would hold that in a poor country, community investment is high because economic conditions are such that people need each other's wealth (see discussion on collectivist economic cultures and peasant economies in Chapter 1). If true, this finding would add a dimension to the story about the impact of wealth: In less industrialized countries, where access to wealth may determine ecological sustainability, a compounding effect of how this wealth is allocated may be at play. If so, the reasons Zambians invest more in community may be independent of ecological sustainability and more a function of either a.) culturally determined values (e.g. moral economy, as seen in Chapter 1) or b.) investment choices (e.g. Hyden's economies of affection as seen in Chapter 1), both which act to create safety nets. In either case, the more complex hypothesis would hold that community investment in less industrialized countries is a survival mechanism (of people living under a peasant economy – see chapter 1) that ensures people are able to satisfy their basic survival needs. While these community investment decisions also favor the environment (because there is less materialist consumption to drain natural resources), this benefit is only a side effect of a collectivist economic cultural influence that provides security to the society as a whole. If this scenario holds true, one would expect a separate analysis of Zambian respondents to suggest that this community investment is not a strong predictor of ecological sustainability but may instead lead to social sustainability as perceptions of security would seem to increase.

In more industrialized countries, where wealth is abundant, the creation of the safety net described above may be less important; in fact, in these societies, it may be individual resource allocation that satisfies survival needs. This does indeed seem to be the case in the United States where each person works and pays for the shelter and food of his or her family. It would be rare (even shameful) for an American to ask his neighbor to help him pay his electric bill, whereas in Zambia, under Hyden's (1983) economies of affection, I have seen this happen many times. Similar to the wealth discussion above, then, once

personal resources satisfy survival needs in industrial countries, ecological sustainability becomes dependent on personal investment choices, a prominent feature of individualistic societies. If they are invested in the community and away from the self, this likely decreases overall consumption and increases ecological sustainability because fewer natural resources are depleted. One would expect, then, that a separate analysis of Oregon respondents would show that community investment is a strong predictor of ecological sustainability and would indicate that people were choosing to use their surplus resources for collective (perhaps environmental) goods rather than individual ones. Clearly, a more detailed analysis (see Chapter 3) is needed to understand the interplay of wealth and resource allocation on ecological sustainability in the two cases.

The last factor affecting ecological sustainability among all respondents was gender. The data suggest that women's responses reflected greater levels of ecological sustainability than those of men ($\beta = 0.118$, $P = 0.019$, see Table 2). If the explanations concerning the impact of wealth and choice above hold true, then this data suggests that women either 1.) Are more economically isolated, more marginalized by society and more removed from the commodified economy than men or 2.) Choose to allocate their resources in such a way as to favor the environment.

If the first hypothesis holds true, the combination of those three attributes would significantly affect women's ability to consume natural resources and thus, lower their ecological sustainability. There is a large body of literature supporting this case in less industrialized societies where gender roles often determine that men control intra-household cash flow, even though women may play a role in the labour market. (Gezon, 2002; Sibalwa, 1993; Schroeder, 1999; News, 1994; etc.). The question arises, though, why would it hold true across all respondents in this study, including women in the industrialized world who have benefited from advances in women's rights and gender equality? Though a significant relationship was not found between women and wealth (a proxy for the ability to consume resources) using this data, the answer may still be that

despite huge gains in women's rights and gender equality, the disparity between men's and women's ability to consume resources in industrialized societies still exists. Thus, despite the fact that these women have better access to financial resources, they may still have significantly less than men. While this divide may be narrowing, this explanation of the data would suggest that it is still wide enough to have a significant impact on ecological sustainability when analyzed together with Zambian women.

If the second hypothesis holds true, it would support a host of gender based stereotypes that associate women as caregivers who are more environmentally conscious than men. (Schroeder, 1999; Action, 1992) Under this explanation, though women in industrialized societies have more equitable access to resources, they may be choosing to value the environment (because of some fundamental link between women and the earth) by consuming less. Clearly a more detailed analysis (to be done in chapter 3 for each country separately) is needed to better understand the relationship between gender and ecological sustainability.

Conclusion on Ecological Sustainability Among All Respondents in Zambia and Oregon

In sum, level of industrialization and wealth are clearly the most important factors in determining ecological sustainability for all respondents across Zambia and Oregon. These findings suggest that wealth impacts ecological sustainability on two scales – the national and the individual: National wealth (i.e. level of industrialization) seems to create more opportunities for consumption and actually requires it in many instances - e.g. large-scale urbanization in industrialized societies creates settlement patterns where driving to work in a car (which consumes energy in the form of fossil fuels) may be the only option for many people. Personal wealth, on the other hand, allows individuals more power to consume.

Patterns of resource allocation (either to individuals, to the community, or to both) and gender were also significant determinants of ecological sustainability. Considering that level of industrialization is so important for ecological sustainability, we need to better understand the different factors that influence it as a country moves from a low level of industrialization to a higher one. The core hypothesis (as outlined in Chapter 1) holds that changing resource allocation patterns are the single most important predictor of ecological sustainability at different levels of industrialization. Discussions in this chapter suggest the following rationale for why these resource allocation patterns matter:

As a country industrializes, and its citizens, on the whole, are able to satisfy their survival needs (because they have decent paying jobs and access to infrastructure that improves their ability to fulfill these needs), individual choice seems to replace poverty as the controlling factor on people's consumption of natural resources.

The only plausible way to assess the validity of this rationale would be to run the same regression analyses for each country individually, as done in Chapter 3.

Social Sustainability

Though the sustainable development debate focuses mostly on ecological concerns, the social aspects of industrialization deserves equal attention. As less industrialized countries pass over the invisible development threshold, what guarantees are there that they will not face the same social problems encountered in many industrialized countries, e.g. alienation, high violent crime rates, homelessness, etc? At the root of this question is an even more fundamental one: what is social sustainability and what creates it? And further, are the factors affecting social sustainability different as a country's level of industrialization increases?

Data gathered in this project suggest that social sustainability varies in part according to the effect that resource allocation patterns have on people's ability to build relationships at all levels of industrialization; in other words, on people's ability to build social capital (as discussed in Chapter 1). In this section, I will look at social sustainability for all respondents in Zambia and Oregon against the host of socio-economic variables previously discussed (see Table 1) in order to explore how resource allocation patterns drive social sustainability across both countries.

The regression model in Table 3 helps us disaggregate the relative impact of each variable on respondents' levels of perceived happiness. Among all respondents in Zambia and Oregon, perceptions of happiness were positively influenced by two factors: a higher level of industrialization (of a respondent's country) and a higher frequency of religious activity.

Table 3. Logistic Regression of Perceived Happiness Against All Variables for All Respondents

[n= 306, Nagelkerke R^2 = 0.226]

DEP VARIABLE

Perceived Happiness– all respondents

INDEP VARIABLE

Level of Industrialization

Religious Activity

Beta

P

2.235 0.000**

0.009 0.061*

** very significant, * mildly significant, ° loosely significant

This data suggests that the more industrialized a country is, the happier its people are (β = 2.235, P = 0.000, see Table 3). Respondents in Oregon reported more perceptions of happiness than respondents in Zambia. This finding contradicts the core hypothesis developed in Chapter 1, which predicted that people in less industrialized societies would be more socially sustainable (e.g. would report higher levels of perceived happiness) than people in more industrialized societies. The rationale behind this original hypothesis went like this: 1. Social sustainability (e.g. levels of happiness) comes from establishing and maintaining good relationships (i.e. building social capital) with other people, 2.

People living in less industrialized societies are more connected to their communities (i.e. have stronger relationships with them) than people living in more industrialized societies because they invest in them, and thus 3. People living in less industrialized societies are more socially sustainable – e.g. are happier. There are several different interpretations of this contradiction:

1. As reported in Section III of this chapter, logistical constraints prevented having more than one question measuring levels of perceived happiness. In addition, this single question offered only a dichotomous response, either yes or no. As such, there are serious limitations to its applicability in this study.
2. Happiness is a very subjective topic and this study asked people from two very different cultural contexts to report on its prevalence. Despite pre-testing of the survey questionnaires with host country nationals from each case study country, the potential exists that reports of happiness in one context meant something completely different than reports of happiness in the other context. In other terms, reports of happiness may be relative to an individual's context. In support of this explanation, Richard Easterlin, an economist at the University of Southern California, found that "nations with high levels of average income do not show higher average satisfactions than nations with lower levels of average income. In Easterlin's view, these patterns tend to suggest that relative income is far more important than absolute income in determining people's subjective well being." (Frank et al. 2000, p. 10)
3. Availability of infrastructure in industrialized societies may influence people's actual happiness, and respondents' answers may have reported this influence. That is to say that highly industrialized countries may

offer opportunities to increase levels of happiness and well being that are not available in less industrialized countries (e.g. if someone was intent on pursuing the sport of racquetball, it would be easier in the US than in Zambia because the infrastructure is available).

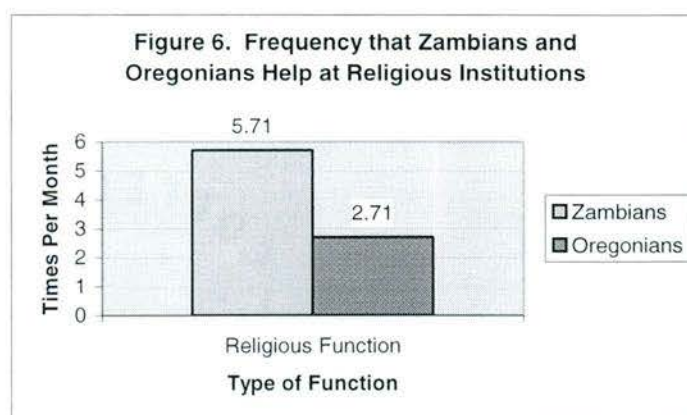
4. Being wealthier (an benefit of living in an industrialized society), while not a factor in this analysis, may actually increase levels of happiness because as levels of industrialization rise people can purchase more luxuries. This explanation, while perhaps circuitously suggested by the finding that industrialization increases happiness, contradicts Baker et al's (2003) claim that happiness is not a function of wealth at all, but of the way people view life. In other words, a person with money is not happier than one without money, but an optimistic person is happier than a pessimistic person. Paul Wachtel (in Sagoff 1997, p. 94-95) argues similarly, concluding that bigger incomes "do not yield an increase in feelings of satisfaction or well being, at least for populations who are above a poverty or subsistence level." Carley and Spapens (1998) noted this same dynamic for wealthy and poor Europeans. If these researchers are correct, then we would expect that wealth might affect perceptions of happiness for Zambians (because it might ease both financial burdens and stress levels associated with satisfying survival needs) but not for Oregonians (whose satisfaction of survival needs and stress levels may be less dependent on personal wealth).

Clearly further analysis is needed to shed light on this contradictory finding. If an analysis of each country suggests that wealth is in fact a significant predictor of perceived happiness in both Zambia and Oregon, then this finding would build a case against the core hypothesis while suggesting that level of industrialization, and the riches associated with it (more readily available in Oregon than Zambia because an increased level of

industrialization assures that people have higher personal incomes and more opportunities to satisfy both needs and wants), are indeed good predictors of perceived happiness. If wealth is an important predictor of perceived happiness in Zambia but not Oregon, or if it is insignificant in both cases, then this data will support Wachtel's (p. 95) suggestion that wealth does not return happiness (as perceived by respondents in this study)"for populations who are above a poverty or subsistence level." The next step then, to be done in chapter 3, is to analyze the factors affecting perceived happiness in each country separately.

The second statistically significant predictor of perceived happiness strongly supports an element of the core hypothesis, which holds that social sustainability (e.g. feelings of happiness) is

dependent on building relationships (i.e. increasing social capital). Here, a respondent's willingness to help out at respondent's religious institution positively influenced their perceptions of happiness. ($\beta = 0.009$, $P = 0.0061$, see Table 3) The rationale here is that helping out at church makes people come into contact with other people and develop relationships with them. It supports social capital arguments made by Robert Putnam (2001) and Christian Bjornskov (2003),¹⁹ among others, that volunteerism (and thus association with other people) makes happy people. The implication here is that relationships matter and so does investment in them. If this "helping at church" finding holds true for both Zambians and Oregonians (i.e. if helping out at church is a significant predictor of happiness in Zambia and Oregon), then support would be garnered for the core hypothesis (and against the industrialization finding) because Zambians helped out at church twice as often as Oregonians (see Figure 6). Again, analyses in the next chapter



¹⁹ Christian Bjornskov (2003) found that happiness was strongly influenced by high levels of social capital in Scandanavian countries.

will look at predictors of levels of perceived happiness in each country to further explore this contention.

In turning to look at the second component of social sustainability (as measured in this study), Table 4 reveals that among all respondents in Zambia and Oregon, levels of perceived safety were most strongly influenced by one factor, investing in the community over the individual ($\beta = 0.131$, $P = 0.039$). Gender was also a significant indicator of perceptions of safety among all respondents, but its low P-value ($P = 0.082$) indicates its effects were modest in comparison to resource allocation patterns.

Table 4. Regression of Perceived Safety Against All Variables for All Respondents

[n= 249, multiple $R^2 = 0.019$]

DEP VARIABLE

Perceived Safety– all respondents

INDEP VARIABLE

	<u>Beta</u>	<u>P</u>
Community vs Individual Resource Allocation	0.131	0.039**
Gender (positive β correlates with being female)	0.110	0.082*

** very significant, * mildly significant, ° loosely significant

The main finding here adds support for the core hypothesis as increased investment in the community (and away from the individual) increased perceptions of safety. Here, not only does “helping at church” increase social sustainability (by increasing perceptions of happiness) but so does a more general allocation of resources (both time and money) to the community (by increasing perceptions of safety). If we think about this relationship, it makes sense. The more someone invests in other people and creates relationships with them (i.e. builds social capital), the wider their safety net becomes. When they have security problems (whether associated with food security, shelter security, or personal security), this safety net is there to protect them.

Diaz et al. (2002) found supporting evidence for this explanation in a less industrialized country, Peru, where social capital, food security, and economic development were all positively related. Would this same finding hold in a more industrialized country as

well? We might recall that the analysis regarding the effects of resource allocation patterns on ecological sustainability above suggested this relationship. There, I proposed that the Zambian penchant for communal investment might represent more collectivist economic cultural influences that created safety nets through resource sharing than resource allocation decisions favoring the environment. In other words, despite the side benefit of environmental stewardship, the real impetus for these societies to invest in others was to ensure social sustainability (e.g. security). That was not the case in the hypotheses regarding Oregonians, however, as resource allocation patterns and the decisions people made about them seemed to be the only significant determinants of ecological sustainability. Were they also significant for social sustainability as suggested by the core hypothesis? Clearly, the more detailed analysis in chapter 3 should help verify or disprove these hypotheses and answer this question.

Conclusion on Social Sustainability Among All Respondents in Zambia and Oregon

In sum, the data in this section paint a mixed picture as to what drives social sustainability (i.e. feelings of happiness and safety as perceived by respondents in this study). While a social capital proxy (i.e. helping out at a respondent's religious institution) predicted respondents' perceptions of happiness, a high level of industrialization was an even stronger predictor, despite the fact that levels of community investment (another correlate of social capital) were significantly higher in the less industrialized case study of Zambia (as seen in Figure 5). Findings regarding perceptions of safety, on the other hand, seem to support the notion that allocating resources to the community instead of the self builds relationships and social capital that return perceptions of safety (and thus social sustainability) to people. How this communal investment impacts feelings of safety at each level of industrialization is one of the principle questions to be answered in chapter 3.

Thus, the core hypothesis that less industrialized countries would be more socially sustainable because they invest more in community (i.e. they build more relationships and more social capital) seems to demand a further analysis. If higher community investment in both Zambia and Oregon leads to higher social sustainability, then we will have support for the core hypothesis because Zambians invested more in community while Oregonians tended to invest more in the individual. If, however, the reverse or some other combination is the case, then perhaps the core hypothesis will have to be revisited to incorporate more fully the data suggesting that people living in more industrialized countries are happier. Clearly, the next step in addressing this contradiction is to analyze each country by itself and actually see how level of industrialization influences social sustainability.

Conclusions

In this chapter, we have explored data surrounding questions of sustainability – both ecological and social – and found that the most significant determinant of sustainability was level of industrialization. The next step, then, is to more fully understand how level of industrialization might influence sustainability. Does being at an earlier stage of industrialization result in different impacts on sustainability than being at a later stage? If so, how? To do this, Chapter 3 will analyze the determinants of ecological and social sustainability by country.

CHAPTER III

RESULTS – ZAMBIA AND OREGON SEPARATELY

In chapter 2, we found that level of industrialization was a prominent factor in predicting ecological sustainability, but that this relationship was less clear with respect to social sustainability. While this information is interesting, in terms of the sustainable development debate it adds little more than saying that we need to “meet the needs of the present without compromising the ability of future generations to meet their own needs.” (-- 1987, p. 43) Everyone knows that highly industrialized countries consume enormous amounts of resources while less industrialized countries continue to struggle to meet daily survival needs. What we need to understand more fully is why? What qualitative differences develop when a country industrializes that allow it to achieve wondrous material development while the environment, and potentially society, deteriorates?

A number of rationales were developed in chapter 2 to explain these qualitative differences. In this chapter, we will use quantitative data to determine the validity of those explanations.

Ecological Sustainability

We recall from Chapter 2 that four variables positively influenced ecological sustainability for all respondents in the Zambian and Oregonian samples – living in a less industrialized country, being poorer, allocating resources to the community over the individual, and being a woman. The most consistent rationale explaining the data suggested that for less industrialized countries, a complex interplay of wealth and

resource allocation decisions was most important in determining ecological sustainability, whereas in industrialized countries, resource allocation decisions alone (based on individual choice) dominated this relationship. Both suggestions support the core hypothesis from chapter 1, which held that one factor influencing ecological sustainability at different levels of industrialization is the pattern of resource allocation most prevalent; Whereas economic cultures in industrialized countries tend to be more individualistic, they tend to be more collective in pre-industrial societies.

The discussion of how resource allocation patterns matter for ecological sustainability at different levels of industrialization suggested the following rationale: As a country industrializes, and its citizens, on the whole, are able to satisfy their survival needs (because they have decent paying jobs and access to infrastructure that improves their ability to fulfill these needs), individual choice replaces wealth as the most significant factor limiting people's consumption behaviors and thus their ecological sustainability.

In this section, then, I will test this rationale by analyzing the data separately for Zambia and Oregon.

Ecological Sustainability in Zambia

As we see in Table 5, ecological sustainability in Zambia is dependent primarily on two factors: being poorer and being a woman - women's responses reflected greater levels of ecological sustainability than those of men.

Table 5. Regression of Ecological Sustainability in Zambia Against All Variables[n= 141, multiple $R^2 = 0.172$]DEP VARIABLE

Ecological Sustainability – Zambia

INDEP VARIABLE

	<i>Beta</i>	<i>P</i>
Wealth	-0.358	0.000**
Gender (positive β correlates with being female)	0.168	0.032**
Rural versus urban	0.061	0.443

** very significant, * mildly significant, ° loosely significant

The Zambian data suggests that ecological sustainability for people living in less industrialized countries is dependent on their personal wealth. Wealthy Zambians were less ecologically sustainable than poor ones ($\beta = -0.385$, $P = 0.000$, see Table 5). As with the data analysis in chapter 1, this level of wealth finding makes sense. In a less industrialized society, overall societal wealth is so low that a majority of people use all (or at least most) of their resources to satisfy survival needs and do not have extra wealth with which to consume material goods. Mattes et al (2002, p. 2), reporting findings from the Afrobarometer,²⁰ found evidence for this contention. They concluded that in Southern Africa, while only small portions of inhabitants are helpless, “large portions are ‘vulnerable’ to external shocks.” These external shocks (e.g. a failed harvest due to drought) are dangerous because of large-scale poverty prevalent in the region. When a crop fails, there are no other resources in reserve to ensure people’s survival. In further support of this analysis, they also found that in 1999 (p. 6), average respondents in Lesotho, Zambia, and Namibia reported that “they or their families ‘sometimes’ went ‘without enough food to eat’ in the previous twelve months.”

Thus, the ability to first satisfy survival needs, and then consume other goods in Zambia and other less industrialized countries, seems to be a function of how much money someone has. Considering that mean income in Zambia was almost infinitesimal compared to Oregon (in Chapter 2 we saw that GDP per capita in 1999 for Zambia was

²⁰ “The Afrobarometer is a short battery of survey questions that quickly but reliably assess poverty and well being without having to do a detailed mapping of household income, expenditure, consumption, or assets.” (Afrobarometer 2003)

\$756 as compared to \$31,872 in the United States), the limits this wealth places on people's consumption seems obvious. The less wealth a person has then, the less they are able to consume goods that deplete natural resources, and the more ecologically sustainable they are.

As Zambians become wealthier, then, and it becomes easier for them to satisfy household survival needs, they likely have extra, disposable resources. With these "extra" resources, wealthier Zambians are able to consume more material goods. This consumption has the potential to drive down their ecological sustainability. For example, many poor people use non-motorized means as their primary mode of transportation, because they cannot afford to take taxis or buses and likely do not have private vehicles (as reported in the chapter 2, over 45% of Zambian respondents reportedly used non-motorized transportation to get around "most of the time" - either walking, bicycle, or animal power). As personal wealth increases, however, they may be use public transportation more frequently and they may even be able to buy a second hand motorcycle or even a car (in Zambia, 28.4% of the wealthiest 50% of Zambian respondents owned motorized transportation – either a car or motorcycle – as compared to only 11.8% of the poorest 50% of Zambian respondents²¹). This shift in transportation behavior as wealth increases is an excellent illustration of how increasing wealth in Zambia can decrease ecological sustainability by increasing use of motorized transportation that consumes energy in the form of fossil fuels.

As wealth becomes more readily available in Zambia and other pre-industrial countries, we would expect consumption patterns to become less regulated by its availability. The question will be, when people can feed their families and have resources left over, what will they do with it? Will they simply increase their consumption patterns? And if so,

²¹ This data was calculated using the two questions: 1. if you own a car, how many liters per 100 kilometers does your car consume, and 2. if you own a motorbike, how many liters per 100 km does your motorbike consume. One of the answers for both of these questions was, "I do not own a motorbike/car." Respondents who did not mark this answer, or did not answer the question, were considered to not own a car.

what impact will this increase have on the environment and on societies? Because there is so much more wealth in Oregon than in Zambia, there are likely to be lessons found by analyzing Oregonians' resource allocation decisions. This task will be taken up in the second half of this section.

The second predictor of ecological sustainability in Zambia was gender. Zambian women's responses exhibited greater levels of ecological sustainability than those of men. ($\beta = 0.168$, $P = 0.032$, see Table 5) Two explanations for why being a woman might improve ecological sustainability were developed in Chapter 2: 1.) Women are sometimes "more economically isolated, more marginalized by society and more removed from the commodified economy than men," and therefore less likely to consume products and services whose ecological impact is severe or 2.) Women, as compared to men, generally "choose to allocate their resources in such a way as to favor the environment."

David Sibalwa's research (1993, p. 39) gives direct support for the first of these two explanations: he reported that while Zambian "women participate in production in rural and urban economies, both in the labour force and in the household, their access to and control over the resources and benefits of the production process remains limited." When we consider that Zambian women are often homemakers and subsistence farmers (Kanchule, 2003), the Zambian data make sense. This lack of "access to and control over the resources and benefits" of their labor limits their ability to consume natural resources (e.g. buying material goods), thus decreasing their individual impact on the environment.

Joseph Mensah et al's research (1992, p. 148-149) suggests that the second of the two explanations might be valid: he found gender based differences related to environmental health in Ghana where women, when compared to men, were "less likely to litter, more bothered by urban waste, and conditioned by culturally imposed gender roles to be responsible for cleaning up." While these findings do not directly confirm a gender-

based determinant of ecological sustainability, they do suggest differences in how Ghanaian men and women view environmental problems. It is interesting to note, however, that Ghanaian women's environmental concerns in this case may all have been related to "culturally imposed gender roles" associated with cleanliness. In other words, being in charge of housecleaning may have conditioned these Ghanaian women to be concerned about cleanliness and thus may have influenced their behaviors and perceptions regarding environmental waste. The implication is that this research may have very little to do with a woman's penchant for the environment and more to do with these culturally imposed gender roles.

The Zambian findings concerning gender, then, seem to give weight to both explanations proposed in the chapter 2 concerning gender. As such, we will need the Oregon analysis to shed further light on how gender relates to ecological sustainability. If being a woman in Oregon significantly influences ecological sustainability, then neither of these explanations can be favored without further research. If, however, sustainability in Oregon is independent of gender, then the first explanation will garner support and the second one will be invalidated: The absence of gender as a predictor of ecological sustainability in Oregon will indicate that when men and women have more or less equal access to resources, as in industrialized societies, women do not demonstrate a penchant for environment by consuming fewer natural resources.

The Zambian story, then, suggests that the most important determinant of ecological sustainability (as measured by consumption patterns) in pre-industrialized countries is wealth. It also suggests that gender differences might play a role in determining ecological sustainability, though this finding could alternatively signify a compounding effect of inequitable access to resources between women and men in Zambia. In both cases, it suggests that the Oregon analysis will shed further light on how different levels of industrialization impact ecological sustainability.

Ecological Sustainability in Oregon

As we see in Table 6, ecological sustainability in Oregon was positively influenced by one factor only - an increase in resource allocation to the community over the individual ($\beta = 0.296$, $P = 0.000$).

Table 6. Regression of Ecological Sustainability in Oregon Against All Variables

[$n = 154$, multiple $R^2 = 0.087$]

DEP VARIABLE

Ecological Sustainability - Oregon

INDEP VARIABLE

	<u>Beta</u>	<u>P</u>
Community-Individual Resource Allocation	0.296	0.000**

** very significant, * mildly significant, ° loosely significant

As compared to the Zambian example, where a person's ability to consume resources (and thus their impact on the environment) seemed to be limited by poverty, in Oregon, where poverty is not widespread, this does not seem to be the case. Here, ecological sustainability seems to be solely a function of resource investment decisions. The more an Oregonian invests in their community, the more ecologically sustainable they are. The more they invest in themselves, the less sustainable they are.

Based on the definitions of ecological sustainability developed in chapter 1, this finding makes perfect sense. When a person has resources to distribute, investing them in community limits individual consumption of natural resources by decreasing overall consumption. When individuals consume their own material goods, the ecological impact is the sum total of all their impacts, yet when the community consumes communal goods, the sum total is just this communal consumption. For example, if each of my friends buys a basketball, our impact on the environment is the total impact of all these basketballs (which include resources spent on growing the rubber trees, the packaging that will become waste, the transportation costs to bring all these basketballs to market, etc.). If, however, we all pool our resources to buy one or two basketballs that we then

share, the total quantity of rubber, packaging and transportation decreases, as does our impact on the environment. So, ecological sustainability in Oregon appears to be about choice. When Oregonians make decisions to invest communally, the sum total of their natural resource consumption decreases and their ecological sustainability increases. The question is, what explains the difference between the Zambian and the Oregonian findings? In other words, how does industrialization change the factors affecting ecological sustainability?

At low levels of industrialization, it appears that general poverty limits the amount of resources people consume. The reason Zambians were found to be more ecologically sustainable than Oregonians then is because they simply do not have the ability to consume as much. Further, this context of poverty in Zambia seems to create a somewhat collectivist economic culture - Table 7 show us that being less industrialized, i.e. being in Zambia, was a very significant predictor of decisions to invest in the community: $\beta = -0.520$, $P = 0.000$. The tendency to invest resources communally, then, also decreases Zambians' ability to consume individually and consequently results in higher ecological sustainability.

Table 7. Regression of Community-Individual Resource Allocation Against All Variables for All Respondents

[n= 237, multiple $R^2 = 0.278$]

DEP VARIABLE

Perceived Safety – Zambia

INDEP VARIABLE

Level of Industrialization

Political Activity

Age

<u>Beta</u>	<u>P</u>
-0.520	0.000**
0.152	0.008*
0.143	0.024*

** very significant, * mildly significant, ° loosely significant

In contrast, at higher levels of industrialization, wealth does not limit people's ability to consume material goods. What does seem important are the decisions people make about where to spend their money. The reason Oregonians were found to be less ecologically

sustainable when compared to Zambians then was because they seem to make lifestyle and investment decisions that consume more resources than Zambians do. While simply living in an industrial society necessitates many of these decisions (see the discussion of urban sprawl in chapter 2, part IV for an example of this reality), the individualistic economic culture that validates these decisions surely plays a role as well.

The fact that gender was not a significant predictor of ecological sustainability in Oregon (while in Zambia it was significant) seems to support the discussion provided above which suggested that, up to a certain level, access to resources controls how much people consume. Whereas in Zambia, women are marginalized such that they do not have the ability to consume resources individually (often because their labor does not produce a salary), in Oregon, it appears that women have the resources that allow them to make choices concerning consumption. And these choices appear to increase their ability to degrade the environment on the same scale as men. This finding also suggests that women are not somehow biologically tied to the environment. If they were, changing level of industrialization would likely not have been a factor influencing their environmental sustainability.

Conclusions on Ecological Sustainability

Data offered in this section on ecological sustainability suggest that the process of industrialization impacts it in two, interconnected ways. First, it creates wealth that allows increased consumption of natural resources. Second, it shifts economic cultural values (from collectivist to individualistic ones) that allow the accumulation of capital necessary for the creation of this wealth. The combination of these two processes is what, over time, helps create the right environment for industrialization while decreasing ecological sustainability.

As the core hypothesis suggested, resource allocation decisions seem to be at the heart of this ecological sustainability puzzle. As a country industrializes, the data from this project suggest that individual choice replaces poverty as the most important factor impacting ecological sustainability. If people choose to value the environment by limiting their individual consumption of natural resources and/or by investing in their communities, then they will likely improve their ecological sustainability.

Surely attaining a high level of industrialization does not work exclusively in this manner. In fact, real life is probably a much more complex fabric with competing social mores laying out acceptable behavior for any given society. A comparative analysis of more socialist countries in Europe with the more capitalist United States might shed a different light on the inner dynamics of resource allocation in industrialized states and their resultant ecological sustainability. In fact, it would likely reveal a whole set of differences based on competing cultures and ideologies that come into play. Further, a more detailed comparison of rural communities in the United States with urban ones would likely reveal significant differences within this country. Likewise, people living in countries with low levels of industrialization are not drones who lack agency. Nor are they simply subject to survival exigencies that impose deeply ingrained sharing ethics to ensure their resources contribute to overall community well being.

Regardless, findings in this study do seem to suggest that at some level, ecological sustainability is dependent on resource allocation, and that these patterns have different origins and consequences at different levels of industrialization. In terms of sustainable development, it is by better understanding these relationships that policy can be improved and the rhetoric can finally be put into practice. To this end, chapter 4 will attempt to integrate this section's findings with the findings on social sustainability (to be explored in the next section).

Social Sustainability

We recall from Chapter 2 that social sustainability was broken down into two distinct variables - perceived happiness and perceived safety. In the analysis of these variables for all respondents, we found that perceived happiness was positively influenced by an increase in level of industrialization and an increase in the willingness of respondents to help at a religious organization (e.g. church, synagogue, mosque, etc.). Perceived safety was positively influenced by an increase in resource allocation towards the community and away from the self.

Taken together, these findings presented a somewhat mixed picture concerning what drives social sustainability: though levels of industrialization had the strongest effect of the three indicators, the other two seemed to suggest that this finding was somehow returning a false positive. In other words, as the core hypothesis proposed, the higher a respondent's level of industrialization was, the lower their social sustainability should have been. The rationale behind this hypothesis suggested that people in pre-industrial societies²² have stronger communities (and stronger levels of social capital) than people in industrialized societies because of a poverty-driven economic culture that puts high value on resource sharing. In the face of scarce resources that ensure food security from year to year, creating these networks of reciprocity through communal investment is the mechanism that these societies have developed to minimize risks. (Scott, 1976)

Given the apparent gap between the findings in chapter 1 and the core hypotheses, the logical next step in testing the core hypothesis was to see what factors contribute to social sustainability in countries with different levels of industrialization. To do this, we next look at the data analyses for social sustainability in Zambia and Oregon separately.

²² The dichotomous labels of pre-industrial versus industrial are used interchangeably with the terms less industrial and more industrial.

Social Sustainability in Zambia and Oregon

As we see in Table 8, the more a Zambian allocated resources to the community over the individual, the more they perceived happiness ($\beta = 0.022$, $P = 0.020$). A parallel finding is seen in Table 9, where this same allocation of resources to the community by Zambians increased their perceptions of safety ($\beta = 0.230$, $P = 0.022$). Taken together, these two findings seem to add weight to the core hypothesis that investment in community increases social sustainability. In other words, in less industrialized countries, building relationships (by donating your time and money to others instead of yourself) creates social capital and increases perceptions of happiness and safety (as perceived by respondents in this study).

Table 8. Logistic Regression of Perceived Happiness Against All Variables in Zambia

[n= 99, Nagelkerke $R^2 = 0.075$]

DEP VARIABLE

Perceived Happiness – Zambia

INDEP VARIABLE

Community vs Individual Resource Allocation

<u>Beta</u>	<u>P</u>
0.022	0.020**

** very significant, * mildly significant, ° loosely significant

Table 9. Regression of Perceived Safety Against All Variables in Zambia

[n= 100, multiple $R^2 = 0.075$]

DEP VARIABLE

Perceived Safety – Zambia

INDEP VARIABLE

Community vs Individual Resource Allocation

Household Size

<u>Beta</u>	<u>P</u>
0.230	0.022**
-0.188	0.060*

** very significant, * mildly significant, ° loosely significant

In conjunction with the chapter 2 data for all respondents in Zambia and Oregon, these findings may provide insight into a possible difference in how social capital effects happiness at different levels of industrialization: Across all respondents, the social capital proxy of religious activity (measured as the amount of time a person invested at

his or her religious institution each month) predicted an increase in perceptions of happiness. In Zambia, another social capital proxy, investment in community (measured as the amount of time and money a respondent invested in communal activities), also predicts an increase in happiness. Though this analogous relationship does not confirm or deny the social capital arguments developed in this project, it does point to an interesting explanation: In Zambia, though investment of time is important for building social capital (and thus happiness), there also seems to be an economic element. This makes sense when we consider that Zambia is a less industrialized country where economic resources are scarce. There, the payoff of investing economic resources into social networks may prove a more beneficial social lubricant than in Oregon where economic resources are abundant. The question will be: when economic resources are not scarce (as is the case in Oregon), are they still a predictor of happiness, or does the availability of time take on more importance? Richard Easterlin (in Warner 2003, p. 1) seems to suggest this very dynamic: 'Most individuals [in industrialized countries] spend a disproportionate amount of their lives working to make money, and sacrifice family life and health, domains . . . where the attainment of one's goals has a more lasting impact on happiness,' writes Easterlin. 'Hence, a reallocation of time in favor of family life and health would, on average, increase individual happiness.'"

In fact, the data in Table 10 reveals that happiness in Oregon is not predicted by an availability of time or money. It is dependent on age. In Oregon, older people reported higher perceptions of happiness. ($\beta = 0.429$, $P = 0.051$)

Table 10. Logistic Regression of Perceived Happiness Against All Variables in Oregon

[$n = 202$, Nagelkerke $R^2 = 0.041$]

DEP VARIABLE

Perceived Happiness – Oregon

INDEP VARIABLE

Age

<u>Beta</u>	<u>P</u>
0.429	0.051*

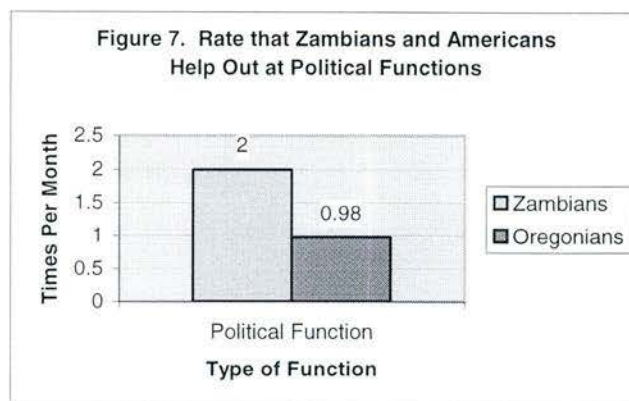
** very significant, * mildly significant, ° loosely significant

Given the rationale offered above, the question arises, why do we not see the creation of social capital through the investment of time to the community (either measured by the community investment index or the religious activity variable) as a predictor of perceived happiness in Oregon? Considering Easterlin's explanations, here we may be seeing a shortcoming of the Community/Individual Investment Index that measured the amount of time and money invested in the larger community, not the family one. If we had measured perceived happiness as a function of how much time people spent with their families, we might have seen that this community investment did return higher perceived happiness scores. In support of this rationale, Costa et al (2003, p. 35), reporting on the "Decline of Social Capital in America," found that "Among Americans older than 64, there were no statistically significant changes in the probability of visiting friends and relatives in the 1990s," while the frequency of family visits by younger Americans did decline. Thus, it appears that older people in the Oregonian sample may have reported higher perceived happiness than younger ones because they invest more of their time to family.

The data presented above seems to demand further research to better understand the relationship between age, investment of time and/or money to the community (which, depending on the context, could be either the family or a wider network of friends, relatives, and neighbors), availability of wealth, and perceptions of happiness at different levels of industrialization. That said, the explanations offered suggest that, as the core hypothesis predicts, building social capital by investing in others is important for social sustainability (as measured by happiness). The more we build relationships by investing in others, the healthier and happier our societies will be. Given that Zambians, when compared to Oregonians, created more social capital by 1. helping out more at religious institutions (Figure 6, chapter 2), 2. helping out more at political meetings (Figure 7 - on next page) and 3. investing more time and money into the community (Figure 5, chapter 2), the question remains, why did Oregonians report higher perceptions of happiness than Zambians? Given the discussion already offered, one explanation would suggest that

there are two kinds of happiness – material happiness and spiritual happiness²³ – and that perceptions of happiness in this study reflected material happiness. Were the questions phrased differently (e.g. if they asked respondents how they felt inside when a person was born into their community or how often people

around them smiled), perhaps different results would have been obtained. In any case, more investigation is needed to look into the role that industrialization plays with respect to perceptions of happiness. Next, we turn to see what influences the second component of social sustainability, perceptions of safety, at different levels of industrialization.



The argument that creation of social capital by investing in others promotes social sustainability (as measured by perceptions of safety) at all levels of industrialization is strongly supported by all three perceived safety regression models - Table 4 in chapter 2 for all respondents, Table 9 above for Zambia and Table 11 (below) for Oregon ($\beta = 0.174$, $P = 0.032$). It makes sense if we think of human needs and living patterns. When people make an effort to create relationships with other people around them, then when they are in need, these other people will provide support. This reality makes people feel safe. If people neglect these relationships, then when they have troubles, they will have no one to turn to. That said, the question for this project is: Though level of industrialization was not found to be a significant predictor of perceived safety in chapter 2, are there different factors affecting this element of social sustainability at different levels of industrialization?

²³ Spiritual happiness in this case refers to happiness not brought on by improvement in material conditions. For example, the amount of happiness someone feels when their friend gets married or when their child is born.

As we saw in Table 9, the other factor predicting perceptions of safety in Zambia was household size. ($\beta = -0.188$, $P = 0.060$) There, it appears that people feel safer when there are fewer people living in their household. In contrast, as Table 11 reveals, in Oregon, a larger household positively influenced perceptions of safety. ($\beta = 0.198$, $P = 0.026$) Though age and gender were also loosely significant indicators of perceived safety in Oregon, their low P-values ($P = 0.076$ for age and $P = 1.50$ for gender) indicate that their effects were modest in comparison to resource allocation patterns and household size.

Table 11. Regression of Perceived Safety Against All Variables in Oregon

[$n = 150$, multiple $R^2 = 0.080$]

DEP VARIABLE

Perceived Safety – Oregon

INDEP VARIABLE

	<i>Beta</i>	<i>P</i>
Household Size	0.198	0.026**
Community vs Individual Resource Allocation	0.174	0.032**
Age	0.159	0.076*
Gender	0.116	0.150

** very significant, * mildly significant, ° loosely significant

Considering the Durkheimian modernization perspective, which explains "... crime rates in terms of industrialization, urbanization, the division of the labor, social disorganization, anomie, modern values, and cultural heterogeneity" (Neuman et al., 1988, p. 283), the household size finding for Oregon makes sense. In this industrialized frame of reference, where daily news headlines regularly report murders, thefts, domestic violence and break-ins, perceptions of safety likely reflect fears of personal injury or crime. Here, having more people in your home would quite naturally create a buffer against would be aggressors or thieves. In support of this dynamic, Gates and Rohe, Will and McGrath, and Borooah and Carcach (in Hatfield et al. 2001, p. 8) all found "a relationship between household size and fear of crime, with people living alone being more fearful of crime than people living in households with two or more persons."

In order to understand the Zambian data, which found the opposite extreme (with larger households decreasing perceived safety), it is essential to consider the realities of a less industrialized context. Zambians' perceptions of security likely reflect fears due to societal poverty and the circumstances that accompany it. During the Zambian survey, many respondents' remarks to the interviewer illustrated just this point. The most frequent comments reflected a widespread fear of death (people reported seeing so many of their neighbors dying that they often wondered, "Am I next?"). Others reported the "extremely high cost of living," "an inability to earn enough money to see through the month," and "the huge impact of AIDS." The overwhelming impact of AIDS in Zambia ("nearly one in five adults is infected with HIV and 570,000 children already are AIDS orphans" – LaFraniere 2003, p. 1) demonstrates a good example of how widespread poverty can so affect individuals and a whole society. (Baylies, 2002) While all these interconnected fears reflect the general life fears confronted by everyone in the society, they do not necessarily explain why people in smaller households felt safer.

Given the Zambian context outlined above, the obvious explanation for why a smaller household size would increase feelings of security is that the same resources go much further when there are fewer people depending on them. For example, when a person living in a larger household becomes sick, their ability to access health care (e.g. visit the health center or buy drugs) is hampered by the other demands on resources in the household. This uncertainty likely increases their overall sense of dread or fear as discussed above. In a smaller household, where the same quantity of resources is used to satisfy the needs of fewer people, this fear is likely mitigated.

If the availability of resources is the source of these feelings of security though, one would have expected wealth to predict perceptions of safety in Zambia, but it did not. Here, the explanation has to do with the composition of the Wealth Index. If this index had measured an individual's wealth, then it might have predicted perceptions of safety because the more wealth a person had, the less uncertainty they would have felt in

dealing with some of their fears. If they were sick, their ability to heal themselves would have been a function of whether they could afford to go to the clinic and pay for care. In this study, though, wealth was measured at the household scale.²⁴ Thus, a person's ability to go to a clinic and heal themselves is a function of the total demand on the household resources. When this demand is lower (because there are fewer people sharing limited resources), their needs are met more frequently and they report higher perceptions of safety.

Conclusion on Social Sustainability

Data analyzed in this section on social sustainability (as measured by perceptions of happiness and perceptions of safety) seem to support the core notion that investing in your community creates social capital at all levels of industrialization, and consequently, improves the health of society. Considering that Zambians invested more in community than Americans, the question was: would they demonstrate higher levels of social sustainability, as suggested in the core hypothesis? Findings in chapter 2 indicated that, at least on one of the measures of social sustainability, it was in fact Oregon that demonstrated significantly higher perceptions of happiness. Clearly, this contradiction demanded an explanation. While level of industrialization was not a significant predictor of the other measure of social sustainability, perceived safety, this project's goal of more fully understanding factors influencing sustainable development at all level's of industrialization required a country by country analysis.

Explanations of the findings in the country-by-country analysis, while not conclusive, did suggest that the core hypothesis, with respect to perceptions of happiness, was correct. In other words, less industrialized countries (in this study Zambia) create more social capital

²⁴ The Zambian Wealth Index consisted of the size of house a respondent lived in and the availability of electricity. Thus, "wealth" reflected more the wealth of the head of household where a respondent lived than of the individual respondent.

by investing in the community (over the self), and this investment leads to happier, healthier societies. It also revealed an interesting difference in the factors that affect perceptions of happiness at different levels of industrialization: While everyone needs to invest in others to create social capital and be happy, at lower levels of industrialization, where poverty constrains people's happiness, it appears that investment of both money and time are important; At higher levels of industrialization, on the other hand, when money is not a constraint for most people, time seems the most important investment one can make to others.

Creation of social capital through investing in others was also an important element for increasing people's perceptions of safety. The more relationships people make, the wider their safety net is when they are in trouble, everywhere. Though level of industrialization was not a factor, the data on did reveal an interesting difference with respect to what drives peoples perceptions of safety at different levels of industrialization. In Zambia, perceptions of safety are related to being able to satisfy basic living needs. That is to say, dying is a big fear in Zambia so anything that offers security against dying (e.g. having more resources per person that can pay for medicines and treatments in case of illness) increases social sustainability. In Oregon, where poverty-related fears have been overcome by the wealth afforded through industrialization, perceptions of safety are related to protection against crime. There, anything that can protect against physical or psychological invasions would likely increase social sustainability.

Thus, the findings in this study seem to indicate that at some level, social sustainability is dependent on resource allocation patterns, and that these patterns have different origins and consequences at different levels of industrialization. In terms of sustainable development, it is by better understanding these relationships that policy can be improved and the rhetoric can finally be put into practice. To this end, chapter 4 will attempt to integrate this section's findings with the previous section's findings on ecological sustainability.

CHAPTER IV

CONCLUSION

This project has looked at sustainability in two radically different cases – the United States and Zambia – in an effort to understand how the industrialization process affects “sustainable development.” It has suggested that the term “sustainable” is more than a rhetorical tool that justifies further economic development. In fact, “sustainability” seems a much more complex set of relationships dependent on balancing the maintenance of social and ecological needs with people’s economic and material well being. The project thus argued that any form of “sustainable development” must be a function of striking this balance. Because most activity in the field has focused on factors that sustain economic improvement in less industrialized societies, the main purpose of this study was to identify factors influencing ecological and social sustainability at all levels of development.

The primary hypothesis argued that ecological and social sustainability are a function of the way people allocate resources (both time and money). It suggested that in less industrialized societies, a predominantly collectivist economic culture favors a communal sharing ethic that allows people living in poverty to survive. While recognizing that giving communally in these societies is a general behavioral tendency (and that some people can be, in fact, very individualistic), the hypothesis suggests that this sharing ethic in many ways actually prevents the capital accumulation necessary for economic and industrial development, while maintaining both social sustainability (by building social capital) and ecological sustainability (by reducing individual consumption). In industrialized societies, then, the ability to industrialize was afforded by a historical shift in values, power relationships, and economic systems. As peasant economies gave way

to market economies, the survival mechanism changed and collectivist values gave way to individualistic ones. Whereas in pre-industrial times, these people's survival depended on an investment in social networks that could support them in times of need, here, their survival became more dependent on their ability to accumulate resources. In short, people traded in social capital for economic capital. This trade-in led to large-scale capital accumulation that spawned industrialization and led to the dramatic improvements in human well being for many. Unfortunately, it did so at the expense of ecological and social well being.

To test these hypotheses, this project analyzed the dependence of both ecological sustainability (which used individual consumption as proxy) and social sustainability (which used "perceptions of happiness" and "perceptions of safety" as proxies) on a host of socioeconomic indicators in two case studies representing different levels of industrialization, Zambia and Oregon. For ecological sustainability, the core hypothesis (that less industrialized societies would be more ecologically sustainable) was strongly supported, as Zambians were much more ecologically sustainable than Oregonians. For social sustainability, level of industrialization was a factor predicting perceptions of happiness but not perceptions of safety; counter to the core hypothesis (which predicted that social sustainability would be higher in less industrialized societies because they invest more in community that creates more social capital), however, these results indicated that Oregonians were happier than Zambians. Given these findings and the goal of this project (to identify ways in which sustainable development could better operationalize social and ecological sustainability at all levels of industrialization), there was clearly a need to analyze social and ecological sustainability in each case by itself.

Analysis by country revealed that the biggest difference affecting ecological sustainability was, in fact, the way resources were allocated. In the less industrialized case study, resources were allocated more communally (which increased ecological sustainability by reducing overall consumption); in the more industrialized case study,

resources were allocated more individually (which increased overall consumption and reduced ecological sustainability). The point of note was the factors that drove these investment patterns:

In Zambia, widespread poverty favored a more communal investment pattern as a mechanism to ensure people's ability to satisfy survival needs: In certain years (e.g. when a drought reduced agricultural production) or situations (e.g. when the breadwinner of a household dies of AIDS and the dependents have no other income), when Zambians' resources are diminished or wiped out completely, their ability to survive is facilitated by the social networks they have created (through sharing) in the past. Though Zambians demonstrate variation in resource allocation patterns (at certain times investing individualistically and at other times investing collectively), their tendency to invest more communally suggested this survival pattern. In contrast, Oregonians have enough income to satisfy their survival needs without having to rely on communal networks of support. There, societal values placed on free will and personal choice have influenced their investment patterns such that they tend to invest more individualistically (though again, most Oregonians exhibit a mix of collectivist and individualistic resource allocation patterns). Unfortunately, this independence increases their ecological impact as people tend to consume more goods individually. Thus, the findings in this study suggest that as countries industrialize, individual choice replaces poverty as the core factor impacting resource allocation decisions and thus ecological sustainability.

What does this mean in terms of sustainable development? The environment would likely be best served if all societies reverted to pre-industrial states, but realistically we cannot expect less industrialized societies to forego the luxuries of "development" while industrialized societies bask in the technological age. Similarly, though idealistic notions of an earlier, more "primitive" time make good fantasy, very few people in industrialized societies would give up access to modern medicines and protection against the elements afforded by industrialization (e.g. AIDS treatments or solid housing). But maybe

industrialization is not at the heart of the matter here? Maybe what is at stake for sustainable development here is individualism. If development policies in all development contexts (industrialized and pre-industrialized and every step in between) can weigh and measure the outcomes in terms of individualism and collectivism, maybe we can “develop” while also maintaining our societies and environment.

Considering that less industrialized societies have 1. such a smaller impact on the environment and 2. a generally different economic culture than more industrialized societies, it appears that different policies need to be implemented at different levels of industrialization. In already industrialized societies, public policy can improve human beings relationship with the environment by encouraging them to invest in their communities. These encouragements may come in many different forms – i.e. tax laws, fiscal policies, religious revivals, morality debates, environmental ethic development, etc. At lower levels of industrialization, as people develop and gain wider access to resources, they will be faced with the same choices currently facing industrialized societies. In terms of sustainable development, then, strategies must be developed that incorporate the economic realities and resource allocation patterns of those being “developed.” This may mean encouraging technologies that have lower costs and less impact on the environment – e.g. solar or wind energy – and that promote communal well being over individual needs and desires. More fundamentally, it may also mean finding alternative ways to provide the benefits of industrialization (perhaps under more socialist models) without having to accumulate capital individually through natural resource exploitation.

For social sustainability, the story was a little bit trickier: During the analysis of data for all respondents in Zambia and Oregon, several explanations were offered for why Oregonians reported more perceived happiness than Zambians, not the least of which were 1. a potential cultural difference regarding what “happiness” means, and 2. a potential reporting bias that reflected material happiness over spiritual happiness. To add to these explanations, the individual analyses of Oregon and Zambia seemed to support,

albeit indirectly, the core hypothesis that Zambians would be happier than Oregonians because they invest in others and have more social capital. Here, the further explanation demonstrated a potentially qualitative difference between Oregon and Zambia regarding the kinds of investment that create social capital and thus happiness. In industrialized contexts, where economic resources are abundant but time is scarce (because of the many obligations of life – working, parenting, leisure, etc.), perceptions of happiness seem to be more influenced by an investment of time (not money) allocated to family (not to a larger community). Meanwhile, in less industrialized contexts, where monetary resources are scarce but time is abundant, investment of both time and money are important for ensuring returns of perceptions of happiness.

With respect to perceptions of safety, all analyses supported the contention that building social capital by investing in community increases social sustainability. The analysis by country, however, indicated that the threats causing insecurity and low social sustainability in Zambia were different than those in Oregon. It appears that at lower levels of industrialization, people's fears are related to societal poverty and the uncertainty that accompanies it. People see their neighbors dying (of AIDS, among other things) and ask themselves, "Am I next?" These fears for personal health extend to fears for the family (who will take care of my family if I die?). The result, when mixed with lack of resources, increasing household demands, etc., is more insecurity. At higher levels of industrialization, where people have more money, people are more concerned with crime – e.g. theft or personal injury. There, the individuation and mobility of people in industrialized societies has created situations where people live separate lives and mind their own business. Whereas in more close-knit communities, the chance of being attacked or victimized by crime is smaller because everyone knows everyone and people protect one another against outside threats, in highly industrialized societies, these communal safety nets are less frequent.

The perceived safety data, then, supports the core hypothesis' contention that resource allocation patterns matter, at all levels of industrialization. The more people invest in others, the more social capital they will create and the safer they will feel. Further, the findings support the economic culture picture painted in this study – that as countries industrialize, more collective values give way to increased selfishness.

The indications of these findings for sustainable development at different levels of industrialization share some common ground, while also demonstrating a difference. Increased community investment (i.e. the creation of social capital) is needed at all levels of industrialization and more overall resources are needed. But it is the kinds of resources needed – more time in industrialized contexts and more money in less industrialized contexts – that are different.

For sustainable development in industrialized contexts, then, the ability to create social capital seems key. The question is: can economic capital be traded back in for social capital in order to improve these societies? And if so, how? In terms of policy, a shorter work week and longer vacations are potential solutions to increase availability of time. Other recommendations include incentives for community investment, e.g. volunteer work. In addition, national service programs can be developed. Here, kids who complete high school could be responsible to serve their country for 1-2 years. These services could be in the military, Peace Corps / Americorps like programs, or some other service. France's national service program could provide a model on which to build other programs. Lastly, policy could give business incentives for worker cooperatives, "where the 'owners' or members are the people who work in the company." (Ellerman, 1987) Considering the industrialized world is so often run through businesses, this may be the best model for building social capital in the workplace through investment of economic capital.

For less industrialized contexts, clearly social sustainability will depend on developing a mechanism that can tap resources to alleviate poverty. Whether this mechanism can be built on the social capital base that seems prevalent in less industrialized societies is still in question. Policy recommendations that offer financial gain for projects that tap into existing networks of sharing and reciprocity can be promoted. Again, the worker cooperative model comes to mind for business development models in less industrialized countries. Other models, such as the cooperative industrial experiment in the Basque region of Spain, referred to as Mondragon, (MacLeod, 1997) may also provide lessons for policy makers.

In sum, this project has attempted to analyze the role that resource allocation plays on social and ecological sustainability at different levels of industrialization in an effort to advance the field of "sustainable development" beyond its current rhetoric. Clearly, the stories of less industrialized and more industrialized contexts depicted as separate in this study are intimately intertwined through increasing globalization of trade and the field of international development. The key for "sustainable development," then, is in understanding how the two interact and what lessons each has to teach the other. While local policies in individual countries may prove fruitful, large-scale impact may best be achieved by addressing these relationships on a global scale. To this end, international trade and development policies will be a fundamental key to this field. We cannot ignore the role that Northern "wants" play on Southern "needs." (Keekok 2000, p. 42) In other words, social and ecological sustainability seem, at many levels, to be about this interaction. The success of sustainable development, then, will ultimately depend on our ability to reconcile the two.

APPENDIX A

SUSTAINABILITY

Defining Sustainability

Sustainability is the buzzword *du jour* in international development circles, most often hinging on the debate between environmental, social, and economic perspectives. This debate has emerged from an increasing recognition that human beings are becoming “more crowded, more consuming, more connected, and in many parts of the world, more diverse, than at any time in history.” (National Research Council, 1999) As populations level off and people everywhere look to acquire the North’s “wants,” the question for sustainability becomes, “Can the transition to a stable human population also be a transition to sustainability, in which the people living on earth over the next half-century meet their needs while nurturing and restoring the planet’s life support systems?”

“The distinction between ‘environmentally sustainable’ and ‘economically sustainable’ is, roughly, the same as that between ‘sustainable’ and ‘development,’” suggests McNeill (2000). Primarily, this pits maintenance of biological ecosystems against humanity’s well being achieved through economic growth. Though social sustainability is often lost in the debate between the environment and the economy, the social dis-integration emanating from the industrialization process is cause for much concern as well.

For environmental sustainability to occur, human consumption must not exceed the environment’s ability to replenish renewable resources and offer renewable substitutes for non-renewable ones. In addition, the waste generated from this consumption must not exceed the environment’s ability to assimilate this waste. (Daly et al, in Goodman, 2002) According to C.S. Holling (1986) and Vandana Shiva (2000), among others, the rate of human consumption and waste production (as by-products of industrialization) are rapidly approaching these thresholds, and in some cases, has already exceeded them.

For economic sustainability to be achieved, emphasis is placed on “the improvement of human living standards, in which natural resources and the environment may be important but represent only part of the story.” (Toman, 1992) The industrial revolution brought unparalleled improvement in human well being through economic development,

and as a result most contemporary development issues are viewed through this economic lens. It is only in recent years with the addition of sustainable to the development jargon that social and ecological concerns are really being addressed

Social sustainability is based on the premise that people need each other. To this effect, "Anthropologist Ralph Linton wrote in *The Study of Man*, "Every human has the need 'for companionship and for the reassurance and emotional security which comes from belonging to a social unit whose members share the same ideas and patterns of behaviour.'" (Backgrounder, 1996) When people fail to create and maintain social relationships, this need is neglected and society suffers. One good illustration of this dynamic is found in "Emile Durkheim's Suicide (1897), which demonstrated that Catholics were less likely than Protestants to commit suicide, that single people were more likely than married people to commit suicide and that rates of suicide decreased in inverse proportion to family size." (--, 2000) In other words, suicide seems inversely related to the number of connections you have with other people. At a societal level, this phenomenon seems dangerous and unsustainable. Imagine if everyone committed suicide. Industrialization, built on processes (e.g. division of labor, alienation of people from the benefits of their labors, etc.) that break down social relations instead of building them up, is perhaps the biggest culprit causing this breakdown and the social problems that accompany it. Jones (1987) argues that social problems associated with violence "are not isolated events, but reflect the values and beliefs embedded in the deep institutional structure of advanced industrial societies."

The obvious role of industrialization cannot be ignored in considering the discussions of sustainability types offered above. While collectivist economic cultural influences in pre-industrial societies have maintained social relationships through communal resource sharing without over-depleting the world's resources, industrial societies have managed to do just that while also seeing fragmentation of social relationships and networks. It is true that industrialization has wrought a wonderland of short-term material gains, but the long term sustainability of its "progress" is questionable. The need to consider sustainability beyond the myopic lens of economic development is evident.

This project holds that the very concept of sustainability is ecologically based, having "originated in the context of renewable resources such as forests or fisheries." (Lele, 1991) Its definition, then, sharply contrasts the existing dominant economic paradigm, which argues that ecological and social problems are subsets of economic ones. Instead, it holds that without ecological sustainability, economic sustainability and social sustainability are irrelevant. In other words, the biological systems that support life on earth may still be able to sustain life without human societies or economies, but these same societies and economies will cease to exist without the biological support systems that sustain life. For example, the existence of air is independent of economic growth, but economic growth loses all utility when the air people breath kills them. Thus, we cannot have discussions of economic and social sustainability without considering sustainability of the environment.

In sustainable development terms then, the need to consider social and economic needs are on equal footing, both placed within the context of environmental needs. One hypothetical example can illustrate this point: A farmer has a plot of land that he can till. When he harvests, he can sell some of his produce at market for economic gain and he can give some of his grain to his neighbors (who are struggling to nourish themselves this year) in order to maintain good social relationships with them. But, if he depletes his land by ignoring its biological production capacity, the future of his economic and social sustainability may be in jeopardy. The key to sustainable development, then, is the integration of all three types of sustainability, with ecological sustainability providing the base on which all other forms of sustainability can be built. The Alanya inshore fishery, where fishermen collaborated to sustain a renewable resource that would be non-renewable if not well managed, is one example of this type of integration. (Ostrom, 1990) In this case, the fishermen get sustained livelihoods and the resource remains intact, capable to restore and maintain itself.

Measuring Sustainability

The goal of this project is to understand how different resource allocation patterns affect ecological and social sustainability at different levels of industrialization. In order to do this, we need to measure these types of sustainability. Unfortunately, few indicators of this nature exist. Given the dominant economic paradigm, the sustainability benchmark thus far has been the Gross Domestic Product. (Gardyn et al, 2001) Unfortunately, this tool does not really measure sustainability at all. Though it proposes to measure a nation's economic health, in reality,

the GDP tells very little. Simply a measure of total output (the dollar value of finished goods and services), it assumes that everything produced is by definition "goods." It does not distinguish between costs and benefits, between productive and destructive activities, or between sustainable and unsustainable ones. [This] central measure of well being works like a calculating machine that adds but cannot subtract. It treats everything that happens in the market as a gain for humanity, while ignoring everything that happens outside the realm of monetized exchange, regardless of the importance to well being.

By the curious standard of the GDP, [a] nation's economic hero is a terminal cancer patient who is going through a costly divorce. The happiest event is an earthquake or a hurricane. The most desirable habitat is a multibillion-dollar Superfund site. All these add to the GDP, because they cause money to change hands. It is as if a business kept a balance sheet by merely adding up all "transactions," without distinguishing between income and expenses, or between assets and liabilities. (Cobb et al, 1995) In social and ecological sustainability terms, it is even worse. Not only does GDP "not value social capital," (Halstead, in *Real Progress*, 1996) it reports many industrial processing (e.g. wood products manufacturing that depletes forests, chemical plants that contaminate rivers, etc.) as a success for the economy, despite the

fact that this processing may undermine its very own success by depleting resources and degrading the environment.

If, as evidenced above, the GDP is a weak indicator of economic, social, and environmental growth, progress, and/or sustainability, then what are the alternatives? Specific measures have been developed to capture some of the voids left by the GDP: the United Nations Human Development Index takes into account levels of education and availability of health services among other things; the Index of Social Health was developed at Fordham University and has found declines in social well being; William Bennett's Index of Leading Cultural Indicators tried to chart social decline in the US in 1993; and the Physical Quality of Life Index measures certain aspects of health and literacy, as does the World Watch Institute in its State of the World volumes. One that has recently gained currency, however, is the Genuine Progress Indicator (GPI),²⁵ which was developed by Redefining Progress, a San Francisco-based think tank. (Baker, 1999)

The GPI "factors in sectors that are usually excluded from the market economy such as [unpaid] housework, [community work], and volunteering, and then subtract social ills: crime, natural resource depletion, loss of leisure time," pollution, income distribution and number of bankruptcies. What it tells us, in the USA and parts of Europe (Austria, England, Sweden, and Germany), is that while GDP has steadily risen, GPI has fallen. It is a first step towards a sustainability index. Though it implicitly requires that certain value judgments be substituted for the objectivity of the market, Mathis Wackernagel, director of Indicator Programs at Redefining Progress "points out that, the market itself is a value judgment, as it dismisses everything but financial transactions. 'Valuations are arbitrary judgments and the GDP is full of them,' says Wackernagel. 'It says many things have the value zero, such as housework and the environment.' The GPI figures aren't perfect, he says. 'But we think it's better to give a rough estimate than to say these things are worth nothing.'" (Baker, 1999) Given its inclusion of social and ecological indicators, this project considers the GPI is an excellent starting point for sustainability indicators.

In addition to the GPI, Redefining Progress also developed the Ecological Footprint. This web-based engine²⁶ asks respondents a series of questions regarding their consumption of natural resources. It then analyzes respondents' consumption behaviors against country specific parameters surrounding production and consumption of these natural resources. The results are presented as the number of acres of arable land needed to support the respondent's lifestyle.

While the GPI and Ecological Footprint offer excellent tools on which to build more sustainability indicators, they are not comprehensive by any means. For example, the GPI is a generalized measure that does not allow independent analysis of different types of sustainability (e.g. social and ecological). Meanwhile, the Ecological Footprint bases its calculations on a lot of general assumptions that may vary from region to region, e.g. despite its best efforts, cultural influences affect how various groups of questions are

²⁵ See Redefining Progress' website at www.rprogress.org for more particulars on the GPI.

²⁶ The Ecological Footprint can be taken at www.rprogress.org.

perceived and responded to. As such, this project will develop ecological and social sustainability indicators/indices of its own, building on the solid foundation already created by Redefining Progress.

APPENDIX B

METHODS

Ecological Sustainability Index

The Ecological Sustainability Index was created using a series of four questions regarding respondents' behaviors with respect to eating foods that were processed, packaged, or not locally grown and using fossil fuel burning transportation. Eating foods that were processed, packaged, or not locally grown was considered to be LESS ecologically sustainable than eating non-processed, non-packaged and locally grown foods because the former require more resources for their production and consumption cycles. More frequent use of fossil fuel burning transportation was also considered to be LESS ecologically sustainable because it requires more resources. These questions were borrowed from the Ecological Footprint engine created by Redefining Progress.²⁷ Though the initial project sought to exploit this Footprint engine for each respondent, the final project disaggregated the engine to avoid problems of inter-correlation with other variables. Thus, four questions were retained from the engine. Each question was scaled and weighted in the following manner:

For the question regarding packaged food consumption: If a respondent answered "most of the food I eat is processed, packaged, or from far away," they scored 0. If they answered, "three quarters of the food. . .," they scored 25. An answer of "half" scored 50, "one quarter" scored 75, and "very little" scored 100. This question was given 35% of the overall index' weight because it was considered a good indicator of ecological sustainability.

²⁷ Redefining Progress is a San Francisco-based think tank that addresses a number of issues relating to human sustainability on earth, including societal measures of progress and the impact of individuals on the environment. The Ecological Footprint engine, found at www.rprogress.org, is a web-based engine that asks a series of questions to a person regarding their daily behaviors associated with consumption and waste production. The answers to these questions are then transcribed into an algorithm that translates the respondent's behaviors into global acres required to support a person's lifestyle with similar consumption and waste habits.

For the question regarding distance traveled in a fossil-fuel burning vehicle: If each week a respondent went 0-17 km in America or 0-10 km in Zambia by car, they received a score of 100, signifying high ecological sustainability. A respondent who went 17-170 km in America or 10-100 km in Zambia was given a score of 65. A respondent who went 170-510 km in America or 100-500 km in Zambia was given a score of 30. A respondent who went 510+ km in America or 500+ km in Zambia was given a score of 0. Since these categories were created after the survey was conducted, they are not directly comparable between the two countries. This imprecision slightly favors Americans as being more ecologically sustainable than Zambians because in each case, the same Ecological Sustainability score for Zambians and Americans allowed that Americans traveled farther. For example, a Zambian who scored 100 on this index traveled 0-10 km whereas an American traveled 0-17 km. This question was given 20% of the overall index' weight because it has a combination affect with the next question. That is to say, if a respondent used fossil-fuel burning transportation frequently, then they likely used the alternative transportation resources described in the next question less frequently and vice versa. So, the combined weight of the two questions makes 40% of the Ecological Sustainability index.

For the question regarding frequency of non-fossil fuel burning transportation use: If a respondent used bicycle, foot or animal power to get around "most of the time," they were given a score of 90, signifying high ecological sustainability. Someone who used these transportation resources "sometimes" scored 50, and someone who used them "seldom" scored a 10. This question was given 20% of the overall index' weight for the reasons described in the preceding paragraph.

For the question regarding how often a respondent flew in an airplane: If a respondent spent 0 hours flying each year, they were given a score of 100, signifying high ecological sustainability. Someone who spent 3 hours flying each year was given a score of 75, while 10 hours scored 50, 25 hours scored 25, and 100 hours scored 0. This question was given 25% of the overall index' weight.

Social Sustainability Indicators

Social sustainability Indicators came in two forms – perceptions of safety and perceptions of happiness.

Perceptions of safety were calculated using three questions. Each question was given 33% of the total weight of the indicator:

1. The most weight was given to whether people were surprised to hear of a murder in their community. It was thought that if murders were commonplace and a respondent was not surprised to hear about one, then his/her community was considerably safer than one where murders were out of the ordinary events (i.e. a respondent was surprised to hear of one). This yes/no question received either 10 (a respondent was

not surprised to hear of a murder) or 90 (a respondent was surprised to hear of a murder).

2. Respondents were asked if they felt safe in their communities and if other people felt safe in their community. For the first question, if they felt safe, they scored 65 on the scaled index. If they felt unsafe, they scored 35. For the second question, if others felt safe, they scored 70. If others felt unsafe, they scored 30. It was thought that people would report slightly less influenced decisions when asked about others' feelings than their own. Also, it was felt that "feelings of safety" were considerably less important than the prevalence of murder in a community.

Perceptions of happiness were calculated using one question only because of logistical concerns.

Respondents were asked if people were happy in their community. If people were happy, they scored 60 on the perceived happiness indicator while if people were unhappy, they scored 40.

Community-Individual Index

The Community/Individual Index was created using 8 questions from each survey (the Zambian and the American). The higher a respondent scored on the index, the more likely he/she was to allocate resources (either time or money) towards a communal good over an individual one. Different weights were given to each question depending on its relative importance to the index. Following is an explanation of the rationale for each weight given:

1. For each survey, the first question asked respondents to allocate money to either a communal or an individual expenditure. The raw data were expressed in terms of "amount of money spent on a communal good." The difference between this amount and the total amount allocated would have been the amount spent on the individual good. (see surveys in Appendix 3) This figure was scaled to 100 and then weighted. Because it required a decision paralleling the index itself, it was given 25% of the Index's total composition.
2. The second question required respondents to decide whether they would allocate time to attend a communal event/activity or an individual one. Because the raw data was expressed in binary categories, it was scaled from 1-100 so that choosing a communal event would score a 90 and choosing an individual event would score a 10. This question was also given 25% of the total index's weight because it required a decision parallel to the index.
3. The next set of questions asked respondents to indicate, on a scale of 1-10, how many times they did specific communal events/activities (e.g. help at church) each month and how many times they did specific individual events/activities (e.g. buy something for

themselves) each month. The communal responses were scaled from 50-100 and the individual responses were scaled from 50-0. For both Zambia and the US, there were two questions of each type – individual and communal. Because each question only measured how often a respondent did one half of the index (either communal or individual) and because the events/activities chosen were somewhat arbitrary, each response was given 5% of the total communal score. These questions together made up 20% of each index.

4. The last two questions (which were the same on each survey) asked respondents how many hours per month, they spent on communal or individual events. Again, the communal hours question was scaled from 50-100 while the individual hours question was scaled from 50-0. In the surveys, these questions followed the questions above (in #3), and thus, the respondents were queued to give fuller answers. In addition, they included the words “community” and “individual” in the questions themselves rather than using proxies to represent the index. As such, these questions were each weighted at 15 % of the total index. Together, they tallied 30% of the index’s weight.

Wealth Index

This index began by calculating two wealth indices: one calculated wealth including the number of hours flying per month as a measure of wealth while the other excluded this variable. The other variables used in calculating wealth were as follows: For the US, house size was used as a measure of wealth. In Zambia, house size and presence of electricity were used as measures of wealth. Because the results of the two indices were very close and had small standard deviations, the wealth index without number of hours flying was used so as not to compromise other indices that used the “hours flying” variable – e.g. the Mobility Footprint score, the Ecological Footprint score, and the Ecological Sustainability index.

For the United States, house size was scaled to 100 and used as the Wealth Index. A large house (and thus a large index score) represented wealth whereas a small house (and a small index score) represented poverty.

For Zambia, house size was scaled to 100 in the same way as for the United States. This scaled score was given 80% of the Zambian Wealth Index. In addition, availability of electricity was scaled to 100. If you had electricity, this indicated wealth. If you did not have electricity, this indicated poverty. Electricity was given 20% of the total Wealth Index in Zambia. It was thought that in Zambia, house size can be dependent on variables other than wealth (e.g. availability). Many people live in government housing that is assigned to them. Availability of electricity is a good indicator of wealth, however, because when people do not have money, they are unable to pay their electricity bill. The electricity indicator was not given more weight because of its binary nature.

APPENDIX C

DESCRIPTIVE STATISTICS

ALL RESPONDENTS

	N	Minimum	Maximum	Mean	Std. Deviation
Rural versus urban	374	1.00	2.00	1.1150	.31942
Gender of Respondent	367	1.00	2.00	1.3624	.48135
Zambia - Oregon	374	1.00	2.00	1.5722	.49542
Age of Respondent	373	1.00	4.00	2.2359	1.08909
Number of People Living in House	373	1.00	7.00	3.7721	2.08787
Political activism	283	.00	100.00	13.8869	20.08178
Balance Index	258	.00	49.90	29.2402	13.16000
Religious activity	322	.00	100.00	39.5963	35.05436
Community/Individual Index	258	.00	100.00	45.5179	24.20042
Wealth Index	371	.00	100.00	51.5472	25.47473
Ecological Index	355	2.50	97.50	54.8803	19.75404
Perceptions of happiness	348	.00	100.00	76.1494	42.67835
Perceptions of safety	348	.00	100.00	76.2261	31.78836
Valid N (listwise)	217				

Zambia

	N	Minimum	Maximum	Mean	Std. Deviation
Rural versus urban	160	1.00	2.00	1.0813	.27408
Gender of Respondent	158	1.00	2.00	1.2468	.43254
Age of Respondent	160	1.00	3.00	1.5500	.60188
Number of People Living in House	159	1.00	7.00	5.3145	1.89315
Political activism	113	.00	100.00	20.0885	26.90909
Balance Index	103	.00	49.90	29.4974	13.49305
Wealth Index	157	.00	100.00	43.0828	21.96908
Perceptions of happiness	145	.00	100.00	56.5517	49.74071
Religious activity	136	.00	100.00	56.6912	33.13396
Community/Individual Index	103	17.51	100.00	60.5263	22.24065
Ecological Index	145	28.75	97.50	67.1207	19.36174
Perceptions of safety	144	.00	100.00	73.7500	32.54756
Valid N (listwise)	84				

Oregon

	N	Minimum	Maximum	Mean	Std. Deviation
Rural versus urban	214	1.00	2.00	1.1402	.34799
Gender of Respondent	209	1.00	2.00	1.4498	.49866
Number of People Living in House	214	1.00	7.00	2.6262	1.36367
Age of Respondent	213	1.00	4.00	2.7512	1.08986
Political activism	170	.00	100.00	9.7647	12.25725
Religious activity	186	.00	100.00	27.0968	30.96923
Balance Index	155	.00	48.89	29.0693	12.97525
Community/Individual Index	155	.00	94.77	35.5446	19.97439
Ecological Index	210	2.50	90.00	46.4286	15.06458
Wealth Index	214	.00	100.00	57.7570	26.12029
Perceptions of safety	204	.00	100.00	77.9739	31.20340
Perceptions of happiness	203	.00	100.00	90.1478	29.87561
Valid N (listwise)	133				

APPENDIX D

SURVEYS

Zambian Survey

Part 1: In each question, please Tick or Check the response that best answers the question for you.

1. How old are you?
 - ☐ 18-20
 - ☐ 21-35
 - ☐ 36-50
 - ☐ 51-65
 - ☐ >65
2. How big is the city, town, or place where you live (in terms of population size)?
 - ☐ <1,000
 - ☐ 1,001-10,000
 - ☐ 10,001-100,000
 - ☐ 100,001-1,000,000
 - ☐ >1,000,000
3. What city has the most similar weather to yours?
 - ☐ Lusaka
 - ☐ Solwezi
 - ☐ Kasama
 - ☐ Chipata
 - ☐ Livingston
 - ☐ Mongu
 - ☐ Mansa
4. What is your gender?
 - ☐ Male
 - ☐ Female

Part 2: In each question, please tick (or check) the box that best answers the question for you.

1. How often do you eat animal based products? (beef, pork, chicken, fish, eggs, yogurt, cream, butter, milk, etc.)
 - ☐ Never (vegan)
 - ☐ Infrequently (no meat, and eggs/dairy a few times a week) (strict vegetarian)
 - ☐ Occasionally (no meat or occasional meat, but eggs/dairy almost daily)
 - ☐ Often (meat once or twice a week)
 - ☐ Very often (meat daily)
 - ☐ Almost always (meat and eggs/dairy in almost every meal)
2. How much of the food that you eat is processed, packaged and not locally grown (from more than 350 kilometers away)?
 - ☐ Most of the food I eat is processed, packaged, and from far away
 - ☐ Three quarters
 - ☐ Half
 - ☐ One quarter
 - ☐ Very little. Most of the food I eat is unprocessed, unpackaged and locally grown.
3. Compared to people in your neighborhood, how much waste do you generate?
 - ☐ Much less
 - ☐ About the same
 - ☐ Much more
4. How many people live in your household?
 - ☐ 1 person

- ☐ 2 people
- ☐ 3 people
- ☐ 4 people
- ☐ 5 people
- ☐ 6 people
- ☐ 7 or more people

5. Which housing type best describes your home?

- ☐ Free standing house without running water (shanty compound)
- ☐ Free standing house with running water (residential)
- ☐ Multi-story apartment building (flats)
- ☐ Row house or building with 2-4 housing units

6. What is the size of your home?

- ☐ very large – e.g. 5+ bedrooms, 2+ living rooms, 2-3 toilets, 2+ bathrooms, big kitchen, etc.
- ☐ large – e.g. 4 bedrooms, 1-2 living rooms, 2 toilets, 2 bathrooms, nice kitchen, etc.
- ☐ medium large – e.g. 3-4 bedrooms, 1 living room, 1-2 toilets, 1 bathroom, kitchen, etc.
- ☐ medium small – e.g. 2-3 bedrooms, 1 living room, 1 toilet, 1 bathroom, small kitchen, etc.
- ☐ small – e.g. 1-2 bedrooms, 1 living room, 1 toilet (perhaps outside), 1 bathroom (perhaps outside), small kitchen (or separate structure for kitchen, etc.)
- ☐ very small – 1 bedroom, 1 living room, 1 bath-perhaps an outdoor latrine, separate cooking structure, etc.

7. Do you have electricity in your home?

- ☐ No
- ☐ Yes
- ☐ Yes, with energy conservation and efficiency

8. On average, how far do you travel on public transportation each week (taxi, minibus, coach, or train) ?

- | | |
|---|----------------------------------|
| ☐ 300 km or more | ☐ 5-50 km |
| ☐ 150-300 km | ☐ 0 km |
| ☐ 50-150 km | |

9. On average, how far do you go by motorbike each week (as a driver or passenger)?

- | | |
|---|----------------------------------|
| ☐ 150 km or more | ☐ 1-25 km |
| ☐ 50-150 km | ☐ 0 km |
| ☐ 25-50 km | |

10. On average, how far do you go by car each week (as a driver or passenger)?

- | | |
|---|------------------------------------|
| ☐ 500 km or more | ☐ 50-100 km |
| ☐ 300-500 km | ☐ 10-50 km |
| ☐ 100-300 km | ☐ 0 km |

11. How often do you use any of the following as your primary source of transportation: bicycle, walk, or use animal power?

- ☐ Most of the time
- ☐ Sometimes
- ☐ Seldom

12. Approximately how many hours do you spend flying (in an airplane) each year?

- ☐ 100 hours
- ☐ 25 hours
- ☐ 10 hours
- ☐ 3 hours
- ☐ Never fly

13. If you own a motorbike, how many liters per 100 km does your motorbike consume?

- ☐ fewer than 3 liters per 100 km
- ☐ 3-4 liters
- ☐ 4-5.5 liters
- ☐ 5.5-8 liters
- ☐ more than 8 liters
- ☐ Don't own a motorbike

14. If you have a motorbike, how often do you ride your motorbike with someone else, rather than alone?

- ☐ Almost never
☐ Occasionally (about 25%)
☐ Often (about 50%)
☐ Very often (about 75%)
☐ Almost always
☐ Don't own a motorbike

15. If you own a car, how many liters per 100 km does your car consume?

- ☐ fewer than 4.5 liters per 100 km
☐ 4.5-6.5 liters
☐ 6.5-9 liters
☐ 9-15 liters
☐ more than 15 liters
☐ Don't own a car

16. If you own a car, how often do you drive your car with someone else, rather than alone?

- ☐ Almost never
☐ Occasionally (about 25%)
☐ Often (about 50%)
☐ Very often (about 75%)
☐ Almost always or always
☐ Don't own a car

Part 3: Please give the response that best answers the question for you.

1. You win K50,000 from Kwachamania and have the following problems to spend it on: First, one of your close relations has died and is being buried so you need to buy a coffin and pay for the funeral. Secondly, you have wanted to buy a bicycle for sometime now. The store that sells bicycles has only one left and if you want it, you need to buy it now. How will you prioritize the distribution of your K50,000 between the two costs?

Amount to Funeral K_____ Amount to Bicycle K_____

2. In a given month, how many TIMES do you do each of the following (Tick or check the box that best answers each question for you):

- a. help at a funeral
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 or more
 b. help at a wedding?
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 or more
 c. help at a political organization's meeting or rally?
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 or more
 d. help in your church or other religious organization?
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 or more

3. In a given month, how many HOURS of community or volunteer work do you do? This might include anything in the previous question or anything you do for the well-being of any of the communities you belong to. (Check or Tick one)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10
☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐ 17 ☐ 18 ☐ 19 ☐ 20 or more

4. In a given month, how many TIMES do you do each of the following (Tick or check the box that best answers each question for you):

- a. get your hair done or cut?
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 or more
 b. buy something for yourself (e.g. a razor, glycerin or lotion, hair products, wrappers, trousers, cigarettes, a softie, shoes, etc.)?
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 or more

5. In a given month, how many HOURS do you spend doing something only for yourself to make yourself feel good? Activities for yourself might include the examples in the previous question or *any other thing you do just for yourself*. (Check or Tick one)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10
☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐ 17 ☐ 18 ☐ 19 ☐ 20 or more

6. You have a headache and a slight fever yet there is a burial in your community. Will you go to the burial or stay home? (Check or Tick one)

☐ go to the burial ☐ stay home

7. Are you surprised when you hear about a murder in your community? (Check or Tick one)

☐ yes ☐ no

8. Do you feel safe in your community? (Check or Tick one)

☐ yes ☐ no

9. In general, are people in your community. . . (Check or Tick one)

☐ happy with their lives ☐ unhappy with their lives?

10. In general, do people in your community feel safe? (Check or Tick one)

☐ yes ☐ no

Do you have any comments on this survey? Please note below. . .

American Survey

Part 1: In each question, please circle the response that best answers the question for you. Please answer all questions!

1. How old are you?
 18-20 21-35 36-50 51-65 older than 65
2. What is your gender?
 Male Female

Part 2: In each question, please check the box that best answers the question for you. Please answer all questions!

1. How often do you eat animal based products? (beef, pork, chicken, fish, eggs, dairy products)
 - ☐ Never (vegan)
 - ☐ Infrequently (no meat, and eggs/dairy a few times a week) (strict vegetarian)
 - ☐ Occasionally (no meat or occasional meat, but eggs/dairy almost daily)
 - ☐ Often (meat once or twice a week)
 - ☐ Very often (meat daily)
 - ☐ Almost always (meat and eggs/dairy in almost every meal)
2. How much of the food that you eat is processed, packaged and not locally grown (from more than 200 miles away)?
 - ☐ Most of the food I eat is processed, packaged, and from far away
 - ☐ Three quarters
 - ☐ Half
 - ☐ One quarter
 - ☐ Very little. Most of the food I eat is unprocessed, unpackaged and locally grown.
3. Compared to people in your neighborhood, how much waste (or trash) do you generate?
 - ☐ Much less
 - ☐ About the same
 - ☐ Much more
4. How many people live in your household?

☐ 1 person	☐ 5 people
☐ 2 people	☐ 6 people
☐ 3 people	☐ 7 or more people
☐ 4 people	
5. What is the size of your home?

☐ 2500 square feet or larger	☐ 1000 -1500 square feet
☐ 1900-2500 square feet	☐ 500-1000 square feet
☐ 1500-1900 square feet	☐ 500 square feet or smaller
6. Which housing type best describes your home?
 - ☐ Free standing house without running water
 - ☐ Free standing house with running water
 - ☐ Multi-story apartment building
 - ☐ Row house or building with 2-4 housing units
 - ☐ Green-design residence
7. Do you have electricity in your home?
 - ☐ No
 - ☐ Yes
 - ☐ Yes, with energy conservation and efficiency
8. On average, how far do you travel on public transportation each week (bus, train, subway or ferry) ?
 - ☐ 200 miles or more
 - ☐ 75-200 miles

- ☐ 25-75 miles
 - ☐ 1-25 miles
 - ☐ 0 miles
9. On average, how far do you go by motorbike (motorcycle or moped) each week (as driver or passenger)?
- ☐ 200 miles or more
 - ☐ 75-200 miles
 - ☐ 25-75 miles
 - ☐ 1-25 miles
 - ☐ 0 miles
10. On average, how far do you go by car each week (as a driver or passenger)?
- ☐ 400 miles or more
 - ☐ 300-400 miles
 - ☐ 200-300 miles
 - ☐ 100-200 miles
 - ☐ 10-100 miles
 - ☐ 0-10 miles
11. How often do you bicycle, walk, or use animal power to get around?
- ☐ Most of the time
 - ☐ Sometimes
 - ☐ Seldom
12. Approximately how many hours do you spend flying each year?
- ☐ 100 hours
 - ☐ 25 hours
 - ☐ 10 hours
 - ☐ 3 hours
 - ☐ Never fly
13. If you own a motorbike (motorcycle or moped), how many miles per gallon does your motorbike get?
- ☐ More than 80 miles per gallon
 - ☐ 65 - 80 miles per gallon
 - ☐ 45-65 miles per gallon
 - ☐ 30-45 miles per gallon
 - ☐ less than 30 miles per gallon
 - ☐ Don't own a motorbike
14. If you have a motorbike (motorcycle or moped), how often do you ride your motorbike with someone else, rather than alone?
- ☐ Almost never
 - ☐ Occasionally (about 25%)
 - ☐ Often (about 50%)
 - ☐ Very often (about 75%)
 - ☐ Almost always
 - ☐ Don't own a motorbike
15. If you own a car, how many miles per gallon does your car get? (If you own multiple cars, take the car you drive the most frequently. If you do not own a car, estimate the average fuel efficiency of the cars you ride in.)
- ☐ More than 50 miles per gallon
 - ☐ 35-50 miles per gallon
 - ☐ 25-35 miles per gallon
 - ☐ 15-25 miles per gallon
 - ☐ Fewer than 15 miles per gallons
16. How often do you drive or ride in a car with someone else, rather than alone? (if you do not own a car, this answer could be almost always)
- ☐ Almost never
 - ☐ Occasionally (about 25%)
 - ☐ Often (about 50%)
 - ☐ Very often (about 75%)

Part 3: Please give the response that best answers the question for you. Please answer all questions!

1. You are given \$250 and have the following options to spend it on: First, the people on your block are raising money to improve the park at the end of the street. These improvements will include beautifying the landscaping, lighting the tennis/basketball courts, building a jungle gym for kids, and making the walking paths wider. They are asking for donations to help cover the costs. Second, you have been eyeing a new personal electronic device for sometime (either a digital camera, a DVD player, or a new car stereo). How will you distribute your \$250 between the two costs?

Amount to Park Improvements \$_____ Amount to Electronic Device \$_____

2. In a given month, how many TIMES do you do each of the following (Check the box that best answers each question for you):

a. coach or work with youths?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 or more

b. help at a community meeting or event?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 or more

c. help at a political organization or rally?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 or more

c. help in your church, synagogue, mosque, or other religious organization?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 or more

3. In a given month, how many HOURS of community or volunteer work do you do? This might include anything in the previous question *or anything you do for the well-being of any of the communities you belong to.* (Check one)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐ 17 ☐ 18 ☐ 19 ☐ 20 or more

4. In a given month, how many TIMES do you do each of the following (Check the box that best answers each question for you):

a. get your hair done or cut?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 or more

b. buy something for yourself (e.g. clothes, chocolate, sporting goods, music, shoes, razors, hair or nail products, cosmetics, etc.)?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 or more

5. In a given month, how many HOURS do you spend doing something only for yourself to make yourself feel good? Activities for yourself might include the examples in the previous question *or any other thing you do just for yourself.* (Check one)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐ 17 ☐ 18 ☐ 19 ☐ 20 or more

6. You just found out that a reasonably good friend of yours is getting married right in the middle of your long-planned vacation to Europe. Which would you choose to do? (Check one)

☐ go to the wedding ☐ go on vacation

7. Are you surprised when you hear about a murder in your community? (check one)

☐ yes ☐ no

8. Do you feel safe in your community? (check one)

☐ yes ☐ no

9. In general, are people in your community. . . (Check one)

☐ happy with their lives ☐ unhappy with their lives?

10. In general, do people in your community feel safe? (check one)

☐ yes ☐ no

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