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Towards Re-Thinking Ecology: Investigating the Influence of Behavioral Economics on Ecological Thought

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The current mainstream ecological discourse among environmental activists seems to be focused on changing the current paradigm of ecological thinking towards one focused primarily on sustainability through a deeper connection with the Earth. Often these activists argue this deeper connection with the Earth is best achieved through a paradigmatic change in thinking. It is the argument of this paper that those who champion a paradigmatic shift in thinking towards sustainability need to re-think their plan of action for creating a sustainable relationship with the Earth's environment because changing society's way of viewing ecological matters as a way to create a more sustainable relationship with the Earth is untenable.

Recently, during the height of Occupy L.A.'s popularity and encampment at City Hall Park in Los Angeles, occupiers could be seen holding signs in protest of factory farming techniques, signs that linked the growth of capitalism to rising CO₂ levels, and signs that hinted at a link between corruption in politics by big oil businesses and climate change. During a General Assembly, one occupier spoke out against what he viewed as environmental injustices being caused by what he called capitalism's "unending thirst for consumption." As he put it:

Our current economic system, our current state of affairs in this country is leading us down a path of environmental destruction. Corporations with no moral or ecological code are polluting our ecosystems at a frightening rate. We need a new economic system—a new way of thinking. (McKibben 2006, 102)

Occupy protestors are not alone in their philosophies and prevailing suspicions regarding the relationship between big government and environmental degradation. This type of thinking seems to be the norm in ecological thought as well. In fact, in his popular book *Eaarth*, Bill McKibben in many ways echoes the viewpoints of the occupiers. He argues that our planet, Earth, is not the same one we used to know because "our economic troubles are intersecting with our ecological ones in ways that put us hard up against the limits of growth" (McKibben 2006, 102). He argues that if humans are going to live on Earth for much longer, we need to start thinking and acting differently—we need to promote smaller farms and change our capitalist mindset that bigger and more is better. "We'll need chief among all things to get smaller and less centralized, to focus not on growth but on maintenance..." (McKibben 2006, 204). McKibben's avenue for creating this world where we focus on getting smaller is through a different way of

thinking—this is the inherent problem with his argument. Paradigmatic changes in thinking are slow to process; they are even slower to take root in policy. As McKibben argues, we have roughly fifty years or less to change the way we live and think before we have reached a tipping point of 350 parts per million (ppm) of CO₂ in the atmosphere, which will send the planet into an irreversible destructive state. If this is true, a paradigmatic change in thinking is too slow to effect any change.

Similarly, in both *Ecology Without Nature* and *The Ecological Thought*, Timothy Morton also argues for a revolution of ecological thinking. Even Al Gore's hugely popular *An Inconvenient Truth* argument that people can help stop climate change by a new way of living implies a restructuring of thought. Does not a new way of living require a new way of thinking? What the Occupiers, McKibben, Morton, Gore, and other environmental activists all have in common is they believe that the best way to get people to act more ecologically and thus save the Earth from eminent destruction is through showing people the effects of their actions, getting them to see the larger picture, with the hopes that this new vision will change the way they think about ecology, and thus change the way they act. While this paper champions the arguments of environmentalists like McKibben and others—that there is a connection between economics and ecology that influences the way people think about ecological issues and has negatively impacted the ecological state of the planet—it is the primary argument of this paper that approaching ecological issues by invoking people to think more ecologically has been one of the stumbling blocks of the ecological movement. Changing the social ecological consciousness is no quick or easy task. Very often, as we shall see, people are reluctant to change their habits even if they know it is for the best. The question has always been and still remains—how do we compel people to choose to use greener energy? In other words, the question is not how to get people to start *thinking* ecologically but rather *acting* ecologically. As this paper will show through a historical narration, one of the difficulties in getting people to act more ecologically is the pervasion of rational economics in ecological thought.

The pervasion of rational economic thought in ecology has led to vast swaths of agricultural monocultures planted with genetically modified organism (GMO) seeds because companies like Monsanto have cornered the market on agriculture. Many argue this has led to the disappearance of bees, the main pollinator of all plants on Earth. As McKibben (2006) argues, the pervasiveness of the market mindset has led to a seemingly “unending thirst for consumption.” Many, like McKibben, argue we will one day out-consume our own planet. Governmental policies across the world are doing little to pacify these situations. In fact, as this paper will illustrate, in many cases the policies enforced have exacerbated the very problems for which they were implemented to alleviate. This is due to the assumptions on which the policies are based, that man is a rational actor. Specifically, “Coasian property rights approach for pollution control, cost-benefit analysis of environmental changes, common property resource management, and sustainable development and intergenerational equity issues” are prime examples of the failure of the influence of rational economic thought in ecological policies (Venkatachalam 2008, 640).

Before moving forward, it is important to develop working definitions of ecological thought and rational economics. Ecological thought is different than ecology, yet closely related. If we define ecology as the study “of the interrelationship between any system and its environment” (*Oxford English Dictionary*), be it an economic system, a societal system, or a

system of relationships between different organisms, then the ecological thought is the philosophy, “the type of epistemology and/or methodology,” which grounds, influences, and/or constructs ecology (Hayward 1994, 22). In his essay “Ecological Thinking,” Dave Storey (2010), describes ecological thought as “thinking that looks at the nature and consequences of relationships” (3). At present, much of the discourse surrounding ecological thought is centered on climate change, as the fear of total ecological destruction has trumped most other causes. Yet for the purposes of this essay, ecological thought is the mindset of everyday consumers for thinking, acting, and living ecologically. Further ecological thought is not merely ecological discourse, but behavior and action, which affects ecology as well. Currently, due to the historical relationship between rational economics and ecology, ecological thought and ecological practices are not sound.

Twenty-first century ecological thought is often defined and explained in economic terms. Today, “Nature is nothing more or less than an economic system” (Worster 1994, 291). Scientists describe ecological communities in terms of their input and outputs. “Entomologists portray the typical river as an assembly line that conveys energy and matter to organisms along the way” (Worster 1994, 292). Environmentalists often talk about ‘giving back to nature’ or putting back what you use. The food chain is a classic example of economics’ influence on ecological thought (Worster 1994). Ecosystems are conceptualized much in the same way economic systems are conceptualized, with organisms as the consumers and traders. Thermodynamics, the science based on the idea that what energy goes in must also come out and which is also based on rational economic thinking, is also leaving an indelible mark on ecological thought; now “energy is becom[ing] economic” (Worster 1994, 306). Ecological thought and economic thought are now in many ways one and the same.

Rational economics, or what is commonly referred to as neoclassical economics, rests firmly on three major assumptions. E. Roy Weintraub (1993) outlines these assumptions in the *The Concise Encyclopedia of Economics*: “1) People have rational preferences among outcomes that can be identified and associated with a value. 2) Individuals maximize utility and firms maximize profits. 3) People act independently on the basis of full and relevant information.” (1). These three assumptions have been accepted as facts among orthodox economists and have come to define market systems and market actions, which have, as we shall see, affected ecological practices and policies. Yet these assumptions fail to consider human beings as emotional creatures. They fail to recognize that at times human actions are not rational. Sometimes human beings act on base instincts hardwired into their systems through evolution. People do not always, and in fact often do not make, rational decisions based upon what is best for them. In fact, challenging these very assumptions is the basis of behavioral economics. As Dan Ariely (2008) puts it, “We usually think of ourselves as sitting in the driver’s seat, with ultimate control over the decisions we make and the direction our life takes; but, alas, this perception has more to do with our desires—with how we want to view ourselves—than with reality” (243).

The assumptions of neoclassical economics have influenced ecology, ecological thought and practices since the Enlightenment. What follows is a historical narration of the relationship between neoclassical economics and ecology meant to illustrate the problematic interaction between the two.

History of Relationship between Economics and Ecological

“Like a stranger who has just blown into town, ecology seems a presence without a past.”

Donald Worster, *Nature's Economy*

The history of ecological thought can be defined using two differing time periods: the Age of Enlightenment and the Romantic Era, and while both schools of thought have separate views of the relationship between humans and ecology, the influence of economics on ecology cannot be extracted from either time period or either school of thought.

As Raymond Williams (1983) illustrates in *Keywords*, ecology and economy have the same root in *eco* meaning *oikos*, which is from the Greek for “household.” Their endings differ with *nomy* meaning “management” and *ology* meaning “systematic study of.” Williams (1983) writes, “H.G Wells saw economics as a branch of ecology [...] the ecology of the human species” (111). As this illustrates and Tim Hayward (1994) argues, “If ecology at root means the study or science of the *oikos* and economy means its management, then there would seem to be enough reason to see ecology and economy as mutually dependent allies” (91). This, however, has not always been the case. As Hayward (1994) illustrates, the reason for these would-be allies’ separation was the move of economics away from *oikonomia* “which had a connection to the good life” and toward chrematistics, or a philosophy dealing solely with profit (91). The move from *oikonomia* to chrematistics led to the capitalist economy humans recognize today. This is the economy that is concerned primarily with individualistic modes of operation and away from community operations of the household that might concern the ecologist. This is the capitalist economy we have come to know and which rests firmly on the assumptions of neoclassical economics—one of the hallmarks of which is *homo economicus*.

Scottish Enlightenment philosopher Adam Smith’s *Wealth of Nations* is often credited with birthing the concept of *homo economicus*, and while he may have popularized neoclassical economics (Pearce 2002; Gsottbauer & Van den Bergh 2010), the roots of his book and economic man began a bit before with the likes of Immanuel Kant. Kant separated nature and humanity; “moreover, [he] recognized that nature cannot be adequately comprehended on analogy with a machine” (Hayward 1994, 18). Somewhat later in the nineteenth century, Thomas Malthus linked population growth with limitations in resources, which sent a reverberation echoing throughout ecological thought and influenced the likes of Darwin and Boulding. Boulding’s Spaceship Earth theory, much like that of the Gayan philosophy, echoes the One Earth movement. John Stuart Mill took Malthus’s theory and put it in to practice when he “analyzed the notion of a stationary state in which critical stocks of population and capital were perpetually constant” (Pearce 2002, 60), yet the phrase *homo economicus*, a term that links rational thought, man, and economics, was not coined until 1888 in Ingram’s *A History of Political Economy* (O’Boyle 2007, 322). Today we can understand *homo economicus* in Michel Foucault’s terms. “*Homo economicus* is someone who accepts reality. Rational conduct is any conduct which is sensitive to modifications in the variables of the environment and which responds to this in a non-random way, in a systematic way, and economics can therefore be defined as the science of the systematic nature of responses to environmental variables” (Foucault 2008, 269). We might compare the systematic function of the rational actor in

economics to the function of the ecologist in ecological thought. Both *homo economicus* and the ecologist are the cornerstones of their respective fields of thought, and both schools of thought are indelibly linked to the Age of Enlightenment. Yet, as I will argue later, the systematic response to environmental variables has not always produced sound ecological thinking or sound ecological policies.

While worshipping rational thought in the Enlightenment cemented the relationship between ecology and economics, concerns about the human impact on climate change began sometime before the Enlightenment. It can be argued that the concerns of those in the New World set things in motion for the relationship between ecological thought and economic thought. As Nancy Langston (2010) illustrates in “Air: Climate Change and Environmental History,” American colonies exhibited climate fears and were shocked by the extreme weather conditions found in the New World. Colonials in North America “were convinced that women were particularly vulnerable to the harsh climate” (Langston 2010, 37). They speculated that deforestation might “ventilate the country, and thus furnish the most salubrious and consequently valuable situation for settlers” (Langston 2010, 37). As both Richard Grove (1995) and Langston (2010) show, colonialists on the Caribbean islands were concerned that cutting down trees may lead to drought, which would then lead to famine. Grove and Langston’s illustrations show us a few things. One is that ecological thinking occurred in the New World, and two, that ecological thought was influenced by economic thought even before the word ecology was ever used. Yet the faulty argument of colonials that deforestation might make for a better living situation is representative not only of human dominance over nature, but also suggests that there has been an unhealthy relationship between economic and ecology for a long time.

As Langston illustrates, the New World’s infatuation with climate change and man’s ability to control it was only strengthened by the Enlightenment. Benjamin Franklin, Thomas Jefferson, and the physician Benjamin Rush all noted that deforestation seemed to be linked to local climate change. Jefferson and Franklin were not wholly convinced, arguing for a detailed account of weather records (Langston 2010, 38). It is unclear what Franklin, Jefferson, and Rush’s main concern with climate change was—the health of the people or the market. Regardless, “climate scientists played important roles in nation building” (Langston 2010, 38). Yet the first scientist to actually link climate change to human interaction with the Earth’s ecosystem, Svante Arrhenius, did so in 1896. Arrhenius linked climate change and carbon emissions by arguing that atmospheric changes in CO₂ would lead to higher global temperatures, which would in turn lead to a cycle of glacial and ice cap melting that would in fact lead to further climatic damage (Langston 2010, 38). It would be nearly 70 years before Arrhenius’s arguments would be taken with any sort of validity.

As the story goes, and as Langston (2010), Julie Cruikshank (2001), and Ramachandra Ghuha (2000) all illustrate, the Enlightenment gave way to the Romantic Era, which gave way to a different form of ecological thought—one defined by aesthetics and beauty. This Romantic view of nature was illustrated in poetry by writers like William Wordsworth and Henry David Thoreau, and was championed in the anti-industrial agricultural “back to the land” campaign of Mahatma Ghandi (Ghuha 2000, 19). In the U.S., this view of ecology was promoted by the likes of John Muir who saw his local Sierras as harmonious resources, as “fountains of life,” out of which would spring a well of a renewed sense of humanity and harmony with the natural world (Ghuha 2000, 53). This Romantic view of ecology effected environmental policy to a large

degree. In 1872, the first national park, Yellowstone National Park, was created in the U.S., setting aside almost 3,500 square miles of protected land (Ghuha 2000, 49). Many scholars such as Timothy Morton suggest the Romantic view of ecology is alive and well in the form of preservation techniques and has led to policies like the Endangered Species Act (quoted in Worster 2010, 65).

But as Donald Fleming argues, this type of “posture towards nature [...] was irrevocably coupled to the idea of retreats from practical life, and worse still, to a corresponding devaluation of the workaday world as an appropriate arena for cherishing the natural environment” (quoted in Ghuha 2000, 56). This Romantic view is problematic because, as Morton (2007) argues, the Romantic view of ecology “has been used to support the capitalist theory of value [...] and to justify competition and cruelty” (19). While the Romantic view of ecology purports to step away from rational economic thought, the romantic support of aesthetics only perpetuates the capitalist economic modes of operation, which undermine effective ecological thought and action. As Slavoj Žižek (2008) argues *In Defense of Lost Causes*, “the ultimate obstacle to protecting nature is the very notion of nature we rely on” (444). Žižek is referring to the popularized Romantic version of nature, which in some ways has come to define one part of the environmental movement’s conscience. Aldo Leopold, whose *Sand County Almanac* was one of the most influential ecological books ever written, saw this Romantic approach to ecology as a problem in ecological thought and practice (Ghuha 2000, 57). While Leopold appreciated and championed the beauty of the natural world, “[s]ocially, he recognized that wild areas could hardly be saved without a wider reorganization of the economy on ecological principles[, s]o that the fruits of nature’s use could be more equitably distributed among humans” (Ghuha 2000, 58).

While the Romantic influence on ecological thought is still evident today with movies and novelists often holding nature on a pedestal, the prevailing methodology in ecological policy in recent years has leaned more toward a conservation technique as opposed to a preservation technique. This is evident in the sustainability movement, which seems to be dominant in ecological discourse and action. The shift back to conservation was prompted by the influence of a 1935 paper by A.G. Tansley on thermodynamics (Worster 1994, 301). Tansley’s essay illustrated a new vision and definition of ‘ecosystem’ (Worster 1994, 302). “Unlike the Romantic style of ecology [Tansley’s system] dovetailed nicely with the agronomic and industrial view of nature as a storehouse of exploitable material resources” (Worster 1994, 304). Energy became economic, or as Worster (1994) so eloquently put it, “ecology at last emerged as a full-blown science of natural economics, fulfilling a vague promise more than two centuries old” (311).

Tansley’s definition of ecosystem influenced the groundbreaking work of Rachel Carson’s *Silent Spring* (Worster 1994, 352). As David Pearce (2002), renowned environmental economist explains, after Carson’s work, economists linked “the theory of external effects with an economic interpretation of the rising tide of environmentalism” (58). In other words, Carson’s work opened the door for rational economic thinking to once again become the dominant force in ecological thought. Carson’s 1962 publication changed the face of ecological thinking and environmentalism forever. After her work, people could not help but see the connection between human practices influenced by economic interests and ecology.

In 1966, Boulding published “Spaceship Earth,” an essay comparing Earth to a spaceship with a finite supply of resources. “Boulding’s essay sets the foundations for what many today would still regard as a sustainable society, one that operates within the limits set by finite

supplies and finite flows of materials and energy” (Pearce 2002, 60). As Pearce (2002) explains, “Spaceship Earth” represents the hallmark of ecological economies. It shows how the expansion of economies and subsequent resource depletion leads to a dire situation where “economic activity chemically transforms materials and energy into waste gases: Carbon becomes carbon dioxide” and many scientists agree that carbon dioxide emissions are contributing to global climate change (McKibben 2010; Hayward 1994; Morton 2007; Gowdy 2007).

Carbon dioxide emissions are the result of global capitalism’s exploitation of resources. Global capitalism depends on an endless supply of resources, be it labor or fossil fuel. The bigger an economy gets, the more resources it needs to exploit. The more resources it exploits, the more waste—or in this case, carbon dioxide—it emits. This is the ultimate problem. Around the time Carson and Boulding were illustrating how humans were depleting resources and destroying the health of the planet, professor of economics at the University of Chicago Ronald Coase wrote an essay titled “The Problem of Social Cost.” In this essay, Coase uses the thinking of the marketplace—rational economics—to argue that the solution to the problem of pollution (carbon emissions) is through the free market; this has become known as Coase’s Theorem. Coase argues that since a company must pollute to produce and the health of society depends upon minimal pollution, there is a conflict of interests of sorts. So to curb pollution, Coase posits, you have two options. Either you may tax the polluter based upon pollution rates or allow society to pay the polluter not to pollute. Either way, pollution is minimized and everyone is happy. This is a typical free-market rational actor response to pollution—simply let the market fix it.

As the story goes, Coase’s theorem “opened up a substantial potential for free market environmentalism” (Pearce 2002, 62). Free-market environmentalism has experienced some success. The privatization of water trades in the U.S. was an improvement over the Bureau of Reclamation’s history with water, which dammed a majority of all western rivers that flow to the ocean, in effect raising temperatures in the lower reaches of the rivers and killing nearly all salmon and steelhead runs (Isaak 1999). But beyond the few successes experienced by free-market environmentalism, Coase’s theorem led eventually to what we call today cap-and-trade and carbon offsetting. Both of which, while implemented to help curb carbon emissions and argued to be representative of sound ecological thinking, have in fact had negative ecological effects.

Cap-and-trade is an environmental policy heavily influenced by Coase’s theorem and free market environmentalism. In European countries, cap-and-trade was lauded as the solution to curbing manufacturer’s carbon emissions, but in fact it has done little to slow carbon pollution. In some cases cap and trade has expedited carbon emissions (*Cool It!* 2010). Thankfully, in the U.S. a carbon cap-and-trade policy has yet to move beyond a proposal, yet the model has been implemented for the control of SO₂ pollution. Cap-and-trade works by governments placing a limit on the amount of carbon a manufacturer is allowed to emit (Stavins 2008, 298). Governments would issue a certain amount of permits to pollute. Every year the cap would decrease, hopefully getting manufacturers down to sustainable levels (Stavins 2008, 298). Manufacturers are free to buy, sell, trade or bank allowances (Stavins 2008, 298). Obviously, some manufacturers, such as coal burning plants, will emit more carbon than others. This creates a simple supply and demand function of the market. This takes the impetus to regulate out of the government’s hands and places it firmly in the hands of a newly created market, the carbon emissions market.

The problems with this system are similar to problems within any economic system—there are loopholes. One of these loopholes is that some of the largest carbon polluters would often be given these pollution permits free of cost. This was the problem in the EU because these free permits created vast fluctuations in permit prices. This fluctuation in permit price was passed on to the consumer who saw a huge increase in the price of goods and electricity. The second problem is what is called carbon offsets. When companies do not reach the cap, they get an offset permit. This permit can be sold to higher-polluting companies. These latter companies can take this offset permit and plant trees with it. The idea is that through some magical mathematics X amount of pollution is equal to X amount a trees, which in itself lies on faulty logic because it assumes that trees, while natural extractors of carbon, somehow clean the air of all the other harmful bi-products of manufacturing. Even assuming that the magic behind that math is sound, offset permits still create a problem. For example, in Indonesia Sinar Mas Group, a paper manufacturer, cut down an indigenous forest and replaced it with palm oil trees they can turn a profit (Greenpeace 2010). None of these examples correlates to sound ecological thinking. Behavioral economist Dan Ariely (2008) explains that once something has been turned into a market or in a sense a game it opens the doors to cheating (271-294). This is exactly what happened to cap-and-trade in the EU. While the above arguments against the implementation of a Coasian philosophy for ecological policies is more political in nature than economic, they still serve to highlight some problems ecological action and thinking encounters when influenced by rational economics.

Implementations of the Coasian Theorem in ecological policies like cap-and-trade often fail because of economic reasons as well. One of these reasons is what Venkatachalam (2008) calls the “endowment effect” and what evolutionary psychologists claim is derived from an evolutionary fear of loss. Experiments from behavioral economists like Ariely, Venkatachalam, and Gowdy all show that people have a closer tie to commodities that are already in their possession. This is a tremendous hurdle for polluter-polluter markets like the cap and trade in the EU and the SO₂ market in the US. As Venkatachalam (2008) explains:

[...] the tradable permit system for controlling pollution relies on the endowment of property rights and as suggested by the endowment effect, the exchange of permits in a market structure even with negligible transaction cost may not be as smooth as predicted by the Coasian theorem. This is because, the permit holder who is under the influence of the endowment effect will not be willing to trade it with other potential buyers. (Venkatachalam 2008, 641)

This of course problematizes the market. Venkatachalam goes on to explain what is commonly referred to in behavioral economists’ circles as the status quo bias, wherein people are often hesitant to switch to more efficient, cost effective, and ecologically sound pollution control mechanisms because they simply are comfortable with the way things are. This is a huge problem in developing countries where “the continued industrial pollution problem [...] may be attributed to the status quo bias of the polluters towards the existing inefficient command and control method of pollution control” (Venkatachalam 2008, 643).

Both corporate and personal carbon offsetting have had negative ecological effects. Former Vice-President Gore, turned environmental radical, invented a system whereby

individuals can offset personal things such as plane flights and car trips. It works by the same simple mathematical magic equating plane carbon emission to a certain amount of trees. The problems of carbon offsetting extend beyond the potential faulty mathematics that supports them. The real problem is that carbon offsetting gives people and corporations a false sense of ecological duty. People feel as if they have done their part for the environment, so it will give them license to pollute in other ways. This is clearly not sound ecological thinking nor sound ecological policy and practice.

Behavioral Economics Influence on Ecological Thought

The pervasiveness of rational economic thought in ecological thought has caused oppressive and destructive systems like agricultural monocultures, cap-and-trade, and carbon offsets. It has caused a flawed ecological thinking which has led to poorly designed ecological policies—few of which have helped curb humans' influence on climate change. As Hayward (1994) argues, “Existing economic models are inadequate to ecological realities” (106). So perhaps it is time a new model evolves, a model not founded solely on the tenants of *homo economicus* and rationality. Perhaps it is time we listen to those radical behavioral economists. Perhaps it is time to appeal to our irrational side. A good place to begin with revamping ecological thinking and promoting more ecological sound behavior is with the most important ecological issue of today—climate change.

Studies show that “more than half of Americans, about 54%, favor a wait and see approach to emissions reduction policies” (Gowdy 2007, 3). Many theorists agree that while people may have some ecological concerns, it is difficult for them to support environmental policies meant to alleviate those concerns; it is even more difficult for them to change personal behavior because climate change and ecological concerns are future dangers not immediate ones, and we know through evolutionary biology that humans have evolved to take action for immediate dangers (Gowdy 2007, 3). As Ariely argues in an interview on *ForaTv*, (2011) “If you want to design a problem that people would not care about, it would basically look like global warming.”

The solution is not to incite a revolution of caring and sound ecological thought throughout the world. One of the solutions for behavioral economists is to take advantage of what is called the reputation effect, or in other words, take advantage of celebrity endorsements. That is a very difficult task, but as Ariely, David Brooks, and other behavioral economists teach, it is possible to get people to care about other things, like what it means to be cool, and substitute that caring for ecological thought and behavior. “Ek and Soderholm find that a choice between green and other is determined not only by economic factors but also by the presence of status behavior and relative positions. Their analysis shows that self-image is affected not only by the behavior of others but also by the purchase of green goods” (Gsottbauer and van der Bergh 2011, 283). For instance, sales of ecologically friendly cars are not high, but if ecologically friendly cars were presented as being fashionable or “in,” then sales would theoretically rise and carbon emissions would in turn decrease. Of course, if celebrity endorsements are to be successful and the green movement is to take full advantage of the reputation effect, the movement ought to be mindful of which celebrities endorse the green products and how it is done. In other words, it

would probably not be a wise decision to have Barry Bonds promoting a green product in Los Angeles area.

Framing, which is the rhetorical presentation of a choice, offers possible avenues to rework cap-and-trade and carbon offsetting. Gsottsbauer and van der Bergh (2011) argue that simply reframing the policy can alleviate the cap-and-trade debacle, suggesting that instead of framing the tradable permit in terms of ‘right to pollute,’ it should be called an emissions penalty (285). Behavioral economic experiments by Ariely and others have shown that framing is an important factor in decision making, so if governments and corporations are serious about changing people’s attitudes towards ecology, a simple solution would be to frame cap-and-trade in a way that it promotes *less* emissions instead of promoting the trading of emissions.

Using anchors can also be helpful. Ariely and other behavioral economists such as David Brooks have shown through experiments that a reference number, or anchor, can greatly influence a person’s economic choices. For instance, in *Predictably Irrational*, Ariely (2008) illustrates an experiment in which he had subjects write down the last two digits of their social security number on a sheet of paper. Then on the same sheet of paper he asked people to bid on specific items. Surprisingly, his studies showed people with higher social security numbers often bid higher on the items. Ariely (2008) suggests people were irrationally making economic choices based on a completely arbitrary number. We can implement this theory in energy-saving techniques using a method illustrated by Sebastien Houde and Annika Todd, researchers at Stanfords’ Lawrence Berkeley National Lab and Precourt Energy Efficiency Center. Houde and Todd (2011) argue, “A consumer’s energy should be framed relative to an effective reference point” (2). This could be done simply by either using the average amount of monthly household energy usage as the reference point, or by using a reference point from neighbors who use less energy per month, or by having households set individual household goals (Houde and Todd 2011, 2). Behavioral economists’ studies show that even if they do not meet those goals they could positively affect people’s energy usage.

Yet perhaps the greatest influence behavioral economics could have on climate change and ecological thought is a simple reframing of the green choice. In other words, if it is so difficult to get people to practice ecological thought, why not help them practice it without their even knowing. As Ariely, Brooks, Loewenstein, and other behavioral economists have found in their research, people generally want to do the just thing. Ariely (2008) illustrates the percentage of citizens in different countries and how many of them are organ donors. Not many people if asked would have a problem being an organ donor, but what these studies found was that the difference between those countries with high donor rates and those with low donor rates had nothing to do with some innate feeling towards humanity in any of the countries. The difference was in the framing of the question. On the driver’s license application in countries with low donor rates, the question of whether or not you wanted to be a donor was an option, while in the countries with high donor rates, one had to choose not to be an organ donor. In other words, behavioral economics argues that when it comes to framing, the choice is sometimes made for us. Applying this to ecological thought, one only need make green the regular choice for energy, so that one would have to opt out of green. Most of the time people will choose not to make a choice, and therefore by default they will choose green. This technique could be useful when creating ecological policies and when confronted with the problems of status quo bias and the endowment effect. It could also be useful for grocery stores and billing services. Instead of

having to choose to use recyclable bags, if green was the default choice, people would have to choose to use plastic bags. It could also be used for online billing versus paper bills.

The question remains how many economic benefits there would be with the implementation of behavioral economics into energy and ecological policy. A recent study by Hunt Alcott and Sendil Mullainathan (2010) show that the implementation of behavioral economic research into energy policy could have significant economic and ecological benefits. They show that simply by implementing some of the measures suggested above, such as using green as the default and using framing and reference points to encourage more ecologically friendly energy consumption, there would be a “reduction in electricity consumption by 2.7%,” which if implemented across the US would cut “carbon dioxide emissions from electric power by 0.5%, while actually saving \$165 per metric ton of reductions” (Alcott and Mullainathan 2010, 1). These are good numbers, yet perhaps not strong enough to curb global warming by themselves. Other measures and technologies need to be implemented.

Behavioral economics and appealing to our irrational selves cannot solve all ecological issues planet Earth is faced with today. For example, the issue of agricultural monocultures is a much more complex issue than getting people to choose green. Studies like David Just and Brian Wansink’s (2009) recent article in *Choice Magazine* have argued that by simply rearranging where healthier, more sustainably grown foods are in a grocery store or school lunchroom will get people to choose the food grown sustainably—in other words, not monoculturally. The thinking is that if people start choosing the sustainably grown foods, monocultures would slowly cease to exist. There is recent history to support this argument. Recently, Wal-Mart, a corporation notorious for pushing cheap monoculturally grown and highly processed food products, chose to sell a higher concentration of organic and local products because consumers were buying organic products at a higher rate. So the consumers’ voices can be heard, and rearranging healthier and organic food placements may increase sales while simultaneously and subconsciously, albeit slightly, affecting the ecological consciousness of the general public. Yet this argument fails to accept the amount of influence and lobbying power groups like Monsanto have on the system. Vast amounts of profit are gained by companies that exploit monoculturally grown agricultural techniques, so it is hard to believe that companies would simply choose not to make this profit any more. Agricultural companies would inevitably find other ways to get their products onto the shelves. But as Just and Wansink’s (2009) paper shows, using behavioral economics methods to get people to eat more sustainably will at the very least lead to healthier, happier people.

Behavioral economics theories and experiments have been sweeping the globe. Behavioral economists’ books have skyrocketed to the top of *New York Times Bestsellers* list. Academics in some of the most progressive universities in the U.S. are teaching behavioral economics. And why not? If nothing else, behavioral economics offers a critical interpretation of the history of economic thought. It critically investigates who we are as humans and sheds light on how we make decisions. Will behavioral economics save the world? Is this the end of *homo economicus*? Is the future of neoclassical rational economics in danger? The answer to all these questions is probably “no.” But it should be clear that economics and ecology share a common history, and that their common history has brought humankind to the current ecological and economic condition. For those who are concerned with both of those conditions, the integration of behavioral economics into ecological practices would offer solutions for improving those

conditions. Perhaps if we can get people to unconsciously choose ecologically friendly solutions, then green technologies that have been proven to be beneficial to the ecological state of the planet will be more easily interwoven into the fabric of everyday life. Perhaps if leaders of ecological movements focus more on getting consumers to behave more ecologically by accepting some of the lessons behavioral economics teaches us instead of focusing on a global restructuring of thought, then the ecological movement might be more successful.

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