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Electric Power and Social Attitudes

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Electric Power and Social Attitudes
An Interactive Qualifying Project Report

Submitted to the faculty

Of the

WORCESTER POLYTECHNIC INSTITUTE

In partial fulfillment of the requirements for the
Degree of Bachelor of Science

By

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Date: April, 2005

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Abstract

This project seeks to examine the miscommunications that arise in discussions concerning electricity deregulation and its environmental impact due to the participants' opposing discourses of environmental reality. Discourses dominant in the debate are analyzed, and interviews conducted with participants in the deregulation and environmental debate. The interview data is analyzed, with special emphasis on the different associational loads the concepts being debated must bear within each discourse. Recommendations are made on ways for participants to reach a mutually satisfactory consensus.

Authorship

We, as a group, created a written report on how certain discourses are seen in the electric power industry and how they can relate to creating a more environmentally stable system. We all worked together on creating a background, however, the actual initial discussion and analysis of the discourses was created by Alex. The method in which we were to go about our collection of data was again worked on by all of us, but the majority of the work was done by Phil. Jared generated the first list of interview questions, then discussed them with the group and went back to create two more drafts before we all agreed on a good set. We all analyzed the data collected from 7 participants and created our conclusions from that.

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1 Introduction

The generation of electric power is currently the single greatest source of climate change inducing carbon emissions in the United States, accounting for 41% of all carbon emissions in 1999 (Energy Information Administration, 1999). This problem is largely due to the fact that the capacity of modern technology to reduce such emissions remains severely underutilized. Up to 50% of electric power in 2002 was generated by the burning of coal, which is the worst fossil fuel in terms of toxic emissions per joule of usable energy (*ibid*, 2002). The reason for this lag behind the development of carbon-efficient technology and its penetration into the United States' energy sector has been the subject of numerous debates and recently has been one of the major topics of the argument over electric power sector deregulation. Deregulation's proponents argue that power producers competing in a free market would naturally install the most efficient technology as fast as they can acquire it, if only to maintain an edge over competition. Opponents argue that the energy market has a natural tendency towards regional monopolies, which will reduce the beneficial effects of competition, while the negative externalities of power generation would, they argue, remain unchecked without a regulating government authority. The situation is further exacerbated by recent developments such as the California energy crisis of 2001, which raises the level of acrimony on both sides.

The recent deregulatory reforms, which took place over the late 1990s and early 2000's in most of the United States in general, and in the Commonwealth of Massachusetts in particular, have set in motion a heated debate concerning the electric power companies' impact on the environment, particularly the rate and amount of carbon emissions produced by the fossil fuel fired generating plants. The controversy surrounding the environmental impact of the change was further compounded by the intrinsic connection of this question to larger questions of social ideology and macro-policy, and the lack of consensus, even among experts, on what conclusions should be drawn from the subsequent disaster of the electric generation market in California as opposed to the more positive restructuring of Pennsylvania, New Jersey, and Maryland tri-state markets. The constant bickering between opposing lobby groups has made

market reform a great deal less efficient than it could be otherwise.

In particular, the opportunity afforded by the reform to make full use of the distributed generation model, which entails using many small generating facilities to “distribute” the generation load rather than a few large companies taking care of it all. The model also allows for the shift of more market power from the large power companies to the small businesses that have been left largely unmet. This is a significant concern because the distributed generation model provides the market with a more efficient flow of electricity to consumers, resulting in fewer losses.¹ In addition, when the generation of electricity shifts away from a few very large installations towards many smaller ones, some argue that the competition provides a greater impetus to the development of new generating technologies, and is particularly suited to assist the penetration of zero-emissions technologies, such as photovoltaic power, wind farming, small hydro, and tidal generation, into the electric power market.

We believe that the reason constructive dialogue that results in the adoption of environmentally sustainable generation does not occur more often has little to do with the technical, scientific, or economic complexities inherent in the problem of transforming the United States’ electric power sector. Great though these problems are, they are not beyond the powers of the multitude of intelligent men and women working on them. Nor does the problem lie in the apathy of the consumers. The United States probably has the best-informed consumer base on Earth, and companies selling natural gas and coal have found it worth their while to advertise the alleged cleanliness of their product. The problem rather lies in the social roles individuals play, their lack of consensus on sustainable actions, and the discourses they impose on their pattern of thought as a way to reduce their alienation from these roles.

It is our hypothesis that this lack of consensus towards sustainability, which hampers any sort of large-scale commitment of policymakers to reform and holds back

¹ This is due to the electricity not having to travel as far, therefore reducing the amount of power loss caused by traveling, directly leading to an increase in efficiency, and a reduction of losses. The system also becomes more resilient, thereby lessening the requirement of more capacity.

the new, market-powered, growth burst of zero-emission generating technologies that has been waiting to happen for over a decade², is caused by a disparity of meanings that commonly used terms, such as “deregulation,” “investment,” “technology,” “policy,” “consumer protection,” and so forth hold for the different participants in the discussion. Because of the different discourses each participant participates in, the terms don’t mean the same thing to the adherent of one discourse as they do to the other, hampering communication. The idea of the discourse is that every person has certain beliefs and ideas about different parts of society. These beliefs can usually be put into generalized categories that define the way people think and (sometimes) act. The categories are called discourses and they can range over anything people can have an opinion about. We used John S. Dryzek’s book, *The Politics of the Earth: Environmental Discourses*, as the source for describing the discourses used to characterize actors in the electric power industry.

As long as the different discourses keep debating unproductively, reform of the energy sector will, at best, be limited to ineffectual half measures. In the meantime, the market for electric power keeps on expanding, and the saturation of the electric generation sector with the most modern and efficient technology possible grows ever more vital to the continued well-being of the planet. The solution is not merely more dialogue, but a meaningful dialogue, where the participants will be able to arrive at a new conception of the situation that addresses concerns raised by each participant and allows them to envision an outcome that benefits all sides.

We addressed this problem by drawing attention to it and charting the ways in which professional in particular social roles (transmission engineers, university professors, electric power policy directors and managers, green energy advocates) shapes the assumptions of its participants. To do this, we conducted a series of interviews with persons playing different roles in the electric generation market, and examined the discourse to that each of them adheres to. We analyzed our data for commonalities in the ways of thinking which characterize each group. Then it was possible for us to suggest a

² <http://www.aqmd.gov/monthly/maycov.html>

way through which the opposing groups can “translate” each other’s propositions and concerns into a common language, and can meet on a conceptually neutral territory, resolving the debate to their mutual satisfaction. We hope that such a resolution will reflect reality better, and encourage the development of “green” generation demand and technologies.

In the first section following you will find the methods we used in order to collect our data. You will see the types of interview structure, questions, and analysis methods that were used when conducting our interviews. In the section following the methodology, the background and analysis chapter, you will find the background research we conducted in order to do this project and the analysis of the interviews and policies. The definition of the five different discourses used is there, as are examples of how they are put into practice. After the discourses we talk about the history of the electric power industry, focusing mostly on the recent past in order to give you an overview of what has happened so far in the industry. Finally we analyze the policy and the interviews that were conducted and discuss discourses that each one represents. Since we know most people can have varied opinions, we gave their most pronounced discourse and the discourses they also bled into. Finally, the last section of the paper concludes what we have found and how we propose the different discourses can communicate with one another.

2 Methodology

In order to create a coherent report on the discourses in Massachusetts’ electric generation industry and policies, we needed to first create a method by which we will conduct interviews, analyze them, and analyze the policy currently in Massachusetts. In this section we discuss all of these different requirements in detail. We discuss what methods were used in getting the interviews. We discuss the structure of the interviews. Finally we discuss the ethics of our interviews and how we protected our interviewees. After, we discuss the analysis of the interviews and provide a list of the different responses that we hypothesized that would be consistent with each discourse. After that, we review some of the literature that has also been printed concerning the electric power industry in order to expand the scope of this report to include not only Massachusetts, but

also other states that have deregulated. In this literature, we looked for ways the different discourses represented themselves and we explored how different discourse combinations view deregulation through the eyes of these different viewpoints.

2.1 The Interview

For this project, our group decided to conduct a semi-structured interview. The semi-structured interview format allowed us to get a better idea of people's opinions. The interviews were conducted orally, asking each subject questions specific to current information about electric power restructuring. We interviewed people who have opposing views. The individuals came from many different walks of life, and have unique viewpoints of the electric power sector.

In regard to opinionated responses, a semi structured interview has major advantages over a survey. In a survey there isn't any place for people to discuss their personal thoughts on the subject because the answers are preformatted. Our project focused on how miscommunication between groups is the major obstacle in developing cleaner, sustainable energy. If we used a survey then we would lose the valuable information that open-ended questions provide. We needed opinionated responses so that we could map the areas that different groups disagree. It was important that we didn't offer our personal thoughts about electric power generation, because we wanted to get the most information we can out of the subject within the time allotted. If we provided our own opinions, they would only have diluted the interview, taking up valuable time and possibly influencing the quality of the subject's responses, whereas we needed the subject's opinions in the most unaltered state possible.

We wanted to show the interviewee that we are competent, organized, and professional. We gained more competence everyday by studying the subject of electric power generation. Proper organization is dependent on well thought out questions, an organized methodology, and adequately coaching before every interview. This is why we decided to interview people we have a closer connection to first. By conducting pre-interviews with people we already knew, and people from the WPI community, we were able to find out what needed to be changed in our techniques. Professionalism is obtained by having competence on the issue, and having a well organized methodology.

Also, we needed to act professionally, a task as simple as not asking unrelated questions and as complex as naturally following the flow of a particular interview. While most will be common sense, others will be learned only after trial and error, and talking about what went wrong.

We used an interview format rather than a survey, or questionnaire. An interview served us better because we did an explorative study, rather than proved a point before the study. If we did then we would tailor a survey to check if a hypothesis was correct. Instead we discovered where different people's opinions fall. Although we have a general hypothesis – namely that social roles shape people's discourses of reality, and that the miscommunication between persons holding opposing discourses is the reason for the slow progress in zero-emissions technologies' penetration of the electric power generation sector – we did not wish this hypothesis to color the very results we need to obtain to test it. Rather we preferred to use the data we collected in an open interview context to determine whether or not the respondent provided facts to support our hypotheses independent of a hypothetical survey's design.

In any case, an interview will provide more expansive data, because people's personal opinions about a dynamic subject like power regulation can't be confined to yes and no questions alone. By allowing people to talk, we were able to find common themes and categories that developed organically within each interview.

Then there is the question of anonymity and if it produces opinionated enough responses. In some instances of interviewing about sensitive subjects, anonymity allows the interviewee to better express their opinion since no name is associated with that opinion. At first thought the answer would be yes, but this leads to the questions of how and why. Also, would it be an accurate portrayal of the respondents' beliefs, or would an anonymous interview become too argumentative? This is a question that another study would look into. We gave the person the choice and trust that they will decide what is best for them.

In the following sections, the interview technique is outlined as well as the questions used in the interviews. After that we discuss the purpose of the interviews and how we began to analyze them. Finally, we discuss the analysis of the different literary works read and how they also fit into our analysis of the electric power sector in

Massachusetts.

2.1.1 Getting the interview

Listed below are the guidelines we used in gathering interviews for our project.

1. We started making possible contacts since the start of this project. We went to the Annual Meeting of the Regional Environmental Council and have gotten contacts for latter use. We've talked to a professor with expertise in the field and also made a trip to a natural gas power plant. We are learning networking skills as we progress.
2. After getting the names of possible interviewees the next challenge is to get them to grant us an interview. We will use a contact email to break the ice and show them that we are taking this project seriously.
3. We first will tell them our names, the project name, and the purpose of our paper.
4. At this stage we will ask them about their preferences. This includes how much time they can put aside, if they mind being tape recorded, and if they want anonymity in the report. We will also ask them if they want a copy of our notes after we organize them, and a copy of the final report.
5. If we don't get a response to our initial email, or if the person prefers to communicate by phone, then we will call them. We might suggest a time and a place to conduct the interview, but most likely the interviewee will tell us. This way they will be able to relax during the interview, which is exactly what we want.
6. It is the responsibility of the group to find people of different backgrounds to give the project diverse options. To diversify our interview pool, we attempted to use the snowball technique. This technique involves asking for additional recommended people to interview from the interviewees themselves. By using the contacts they had, we hoped to increase our interview pool.

Some of the simple things need to be covered. We need to make sure that the tape recorder we are using is operational and we have extra batteries on hand just in case.

There will be extra pens on hand. We will have backup transportation to each site.

Hopefully we will have the time to ask all of our questions. If we don't then we are going to ask the interviewee if it would be possible to arrange another meeting. If additional time is not possible, then we will ask if we can finish the questions by phone. Hopefully they will pick one of these two options, or ideally they will allow us to extend the interview beyond the allotted time.

Immediately following the interview we will check our notes with each other to make sure we are in agreement. The tape recording will be listened to by the group at the same time. We can then revise our notes by adding anything that we missed. Then copies will be made and given to the advisors to review.

We will decide which of us will be interviewing and which will be taking notes. Everyone has different strengths and weaknesses which will become clear during the pre-interviews. Before each interview we will decide who is doing what. We will take turns asking question but this doesn't mean that the two who are taking notes can't pipe in if they have something they feel is important to ask.

2.1.2 The Interview Structure

Since we used the semi-structured interview format, the actual interviews themselves were kept rather loose to allow the subject to talk more freely about what came to their mind when we asked them the questions. The questions were used mostly as a guideline as to where we wanted the conversation to go, however we did ask all of the questions to ensure that we had the subject discuss all of the topics we wanted to discuss.

This set of questions was created in order to allow the subject to talk about what he or she thinks about different areas of the electric power industry. In order to analyze each subject, all of the questions were asked, in one form or the other. Some were directly asked if the conversation led off topic, while others were fitted into other questions based on the topics being discussed in the interview at the given time. These questions were also designed in order to allow each subject to be compared to the different discourses, and to rate their answers with answers believed to be common for the discourse in question.

1. What kind of background have you had in the electric power generation sector?
2. What kind of responsibilities do you have working here?
3. What was your view prior to the restructuring of the grid?
4. Were you hoping to get something out of the restructuring, if so, then what?
5. How is the new system working for you and others?
6. Could you characterize some of the things that you disagree with about the restructuring?
7. In your opinion, what caused the California energy crisis?
8. Do you know of other states that have de-regulated? In your opinion, how do the differences between those states' and California's deregulation plans influenced the subsequent fate of the energy markets in those states?
9. Do you think that something like the California crisis could happen here?
10. If so, do you think there are any ways to prevent this from happening?
11. What do you think drives companies to be more or less resourceful in achieving efficiency, environmental or otherwise?
12. What do you think the role of energy prices are with respect to achieving a better state of sustainability?
13. Do you think the government's role should change with respect to the power generation sector, and why?
14. What is your take on government programs that aid in research and development of more efficient energy sources, or programs that give incentives to people who have ideas about better energy sources?
15. How do you feel about the service benefit surcharge included into every electric bill?
16. Do you think that educating people and changing their ideas about electric power generation will better lead to sustainability, or do you think that companies will only alter their production methods and consumers – their buying patterns, when supply problems begin to materialize?
17. In your opinion, what drives companies to be more or less responsible with natural resources and the environment?

18. Do you know of anyone that we should also talk to about this subject?

The techniques that are going to be used will be developed before and after the pre-interviews. There will be an introduction. Then the interviewee will be given the space to talk about their profession, and group affiliations. After the get-to-know-you stage we will get into the questions. The interviewee's will be aloud to elaborate on their answers to the questions, but if they get too far off subject then we will bring them back to the original question. After the interview is finished they will be thanked. They we will contact them about our notes at a latter date.

2.1.3 Ethics

Ethics is an important part of the project. Each person was asked whether or not they will allow the conversation to be recorded, only for the benefit of the interviewees and ourselves. Each name was kept confidential in order to allow the subject to speak more freely about how they feel in regards to the deregulated industry. This anonymity is not a problem as we used a varied group in the interview and there is no accreditation taken from any interview. Each participant was sent a final copy of this document in order for them to see how their information was used, and more importantly as a thank you for taking the time to participate.

2.2 *Analyzing the Interviews*

Analysis of the interviews was accomplished by examining the conversations we had with each interviewee and we examined key points to each other based on what we heard. After the interviews we placed each interviewee into the different discourses we felt that they were part of. This allowed us to later examine each interview individually, discuss what we felt, and ultimately categorize each interviewee into a main discourse and then what other discourses their beliefs bled into. Initially, we looked at each interview and noted the comments that each person made in order to give us a better understanding of where they fell onto the discourse wheel. Upon determining where everyone fell into discourse theory, we used their comments and what we have learned from Dryzek's book to confirm our initial ideas and thoughts.

In addition to discerning the discourses that each person fit into, we also

learned the affect deregulation has had on the Massachusetts electricity generation sector. We gained knowledge in how people felt about the policies in Massachusetts and how they thought things should be different. We learned first hand what was going on in Massachusetts with respect to the different companies, both distribution-oriented and generation-oriented. We learned that some feel policies should be placed to increase the amount of environmentally, and economically, sustainable technologies that are in development. Our analyzing the interviews to determine what people believe is going on also allowed us to see how they responded to deregulation so far.

The table below was used as our guideline in analyzing the answers received from interviewees. We noted each question and compared it to the table in order to identify our interviewee's discourse.

Table 1: The hypothesized response of the 5 discourses

Question	Administrative Rationalist	Democratic Pragmatist	Economic Rationalist	Ecological Modernizer	Green Romanticist
What kind of background have you had in the electric power generation sector?	Regulator, Scientist, Engineer Lobbyist, Educator	Activist, Politician, Lawyer	Business owner, Economist, Engineer, Educator, Scientist	Engineer, Politician, Administrator, Scientist, Activist, Lobbyist	Educator, Activist, Scientist
What kind of responsibilities do you have working here?	Examined policy, proposed regulation schemes, scrutinized various firms and organizations for compliance w/regulations	Some job involving consensus-building and public opinion; perhaps law	Running a start-up, a consulting firm, working on a policy panel	Consulting expert, policy analyst, elected or appointed official	Either scientific work or organizing a grassroots campaign
What was your view prior to the restructuring of the grid?	The inefficiencies of the system can be fixed through further refinement of policy and gathering of information	The system is broken: the decisions are being made by bureaucrats out of touch with the people and not accountable to the ordinary citizens	The system is bogged down in a morass of unnecessary constraints, making necessary reforms needlessly expensive	The system does not reflect the interests of all the people the real goal should be a complete redesign	The laws do nothing. The key is to change people's idea of the world they inhabit.
Were you hoping to get something out of the restructuring, if so, then what?	The restructuring could be a useful bargaining chip. By agreeing to open the markets, concessions could be won for more stringent standards on emissions	Restructuring would allow the citizens of every community direct say in what their electric power is to be.	Restructuring would provide cheaper energy and accelerate the pace of ecology-friendly technological innovation.	Restructuring may well prove more efficient at introducing greener technology to the market, but it will have to be done within a properly defined framework to prevent abuses.	People who take the responsibility to choose their own electricity provider might be forced to find out just how much damage the electricity they are buying is causing the Earth. This may reduce consumption.

Continuation of Table 1

Question	Administrative Rationalist	Democratic Pragmatist	Economic Rationalist	Ecological Modernizer	Green Romanticist
How is the new system working for you and others?	Deregulation presents new problems, but the problems and the successes both highlight the need for informed decision-making by well-trained administrative specialists	Deregulation is unfortunately hampered by the people's apathy and lack of interest. Still, some communities have made substantial progress by embracing distributed generation and greener technologies	The business community has been slow to take advantage of this opportunity, no doubt due to excessive fear on the part of businesses that the government will regulate the electric power market once again.	Deregulation fails to address the basic issue of what resources are available to the generating firm, and which technologies these firms are comfortable with using.	Deregulation can serve the cause of harmony between humanity and the planet, but it shall not unless each individual consumer realizes the need to act.
Could you characterize some of the things that you disagree with about the restructuring?	Electric power is no commodity. A stable service by a controlled utility ensures reliability and fair prices, something that a competitive market tends to overlook.	Wholesalers may gain unfair advantage by manipulating the distribution companies, ultimately costing money to that state's taxpayers.	Deregulating electric power and leaving other necessary parts of the electric economy, such as oil refineries, smothered by regulation, is an absurd proposition.	Deregulation addresses short-term profits as opposed to long-term optimization.	Deregulation can encourage greater and crasser consumerism by tempting buyers with cheaper electric power.
In your opinion, what caused the California energy crisis?	The irresponsible pursuit of profit by wholesalers lacking any long-term relationship with their customers	The fact that all big decisions regarding generation sites, oil refineries regulation, and the rules of energy trading market were made without input from the individual communities whose citizens were purchasing the electricity.	Constraints on energy trading imposed by the inability of the trading parties to hedge against high prices through long-term contracts.	The improper awareness of implications caused the government to look for quick fixes rather than implement a comprehensive plan to make energy both green and abundant	Human desire to place themselves outside of nature. If there had been no consumerist pursuit of material gain, there would have been no excessive demand for electric power
Do you know of other states that have de-regulated? In your opinion, how do the differences between those states' and California's deregulation plans influenced the subsequent fate of the energy markets in those states?	Obviously in those states, government kept a tighter rein on wholesalers. The example of California exposed them, so that they no longer felt safe attempting their gouging	The other states lacked California's bloated bureaucracy and were more open to input from the common consumer	The example of California has taught state governments to trust the buying decisions of free economic agents in an unconstrained field that gives the laws of the market an opportunity to operate	States which deregulated successfully are those which managed to bring the various groups interested in the outcome together with a common goal. Their input allowed state governments to formulate a wiser policy.	States known for successful deregulation cared less about the environment than California, and so were not constrained by the damage they were doing
Do you think that something like the California crisis could happen here?	Yes, if special industry interests somehow manipulate voters into choosing unconstrained power market deregulation and loosening the policy controls that currently keep their operations socially responsible	Yes, unless New England voters take more responsibility for the fate of their own community and stop abdicating their political power to the bureaucrats	No. The example of California has taught states to be on the lookout for price gougers and wholesalers not to endanger their reputation with questionable business practices.	No: the experience of California has taught future policymakers. In all negotiations, they will be able to use California's example if any interest groups advocate wrong kind of policies	Yes: the crisis was caused by an overuse of electricity, and other societies are just as consumerist as California

Continuation of Table 1

Question	Administrative Rationalist	Democratic Pragmatist	Economic Rationalist	Ecological Modernizer	Green Romanticist
If so, do you think there are any ways to prevent this from happening?	The only way to do that is by leaving policy-making to informed experts, not industry pressure groups	To do that requires an informed and active body of citizens, who can exercise their political power with wisdom and foresight, keeping the government from betraying them.	To do that, market forces must be allowed to build up safeguards against market volatility, which means that sometimes, even retail prices must be allowed to go up.	To do that, the basic problem of the environmental impact of electric power generation must be addressed, so that citizens no longer have to worry about pollution caused by generation.	To do that, people will need to come to the realization that living in harmony with Earth is more important than having a few extra megawatts of electricity
What do you think drives companies to be more or less resourceful in achieving efficiency, environmental or otherwise?	The restrictions set on a company by an informed regulatory code force the profit-seekers to develop new, and more acceptable ways to accomplish their objectives	Having a demanding consumer market, with buyer that know what they want and whose community empowers them to demand it	The never-ending process of Schumpeterian “creative destruction”	A government that actively rewards innovation and resourcefulness, both directly and through creating a demand for new technologies through policy action	Having ecologically-conscious people at the helm, who recognize the consequences of every small action on all of nature.
What do you think the role of energy prices are with respect to achieving a better state of sustainability?	If energy prices fall without restraint, it unleashes irrational economic exuberance which can damage the environment; if they rise without restraint, it can create a rush of attempts at finding new sources of energy that bear their own dangers, moderation is the key to sustainability.	By voting on the provider for their community, citizens will ensure, if they so choose, that only the most sustainable methods of generating energy will get that provider a profit. This will lead to an increase in sustainable electric power output.	As long as energy generated by sustainable practices remains more expensive than its alternative, it will remain a minority taste. Under free market, money will flow to satisfy public wish for sustainability, making the price of sustainable electricity lower by funding and developing new technologies	Energy prices are an effect and not a cause: they reflect the underlying premise of the economy’s operation. If the way in which electricity is produced changes throughout the country, so will the prices, including the price of electricity generated by sustainable means	Energy prices are artificially maintained by people’s dependence on abundant electric power to further their materialistic desires. Start living sustainably, and energy will become cheap if only because the demand for it will plummet
Do you think the government’s role should change with respect to the power generation sector, and why?	The government should extend a firmer hand to prevent excesses of deregulation from victimizing the public.	The government should get out of the way of citizens solving the problems of each particular locality through direct participatory democracy	The government should actively encourage entrepreneurship in the energy sector, and remove all obstacles to the operation of the laws of the market.	The government should implement a comprehensive plan that relies on the cooperation of both private and public sector	The government should encourage lifestyles that cherish the non-material treasures and should actively intervene to prevent at least the most glaring forms of environmental destruction
What is your take on government programs that aid in research and development of more efficient energy sources, or programs that give incentives to people who have ideas about better energy sources?	The government should make certain research money is allocated to socially beneficial topics and tasks	The aid money may be necessary, but how it is to be allocated should be left to the voters, who would assign it to problems they care the most about.	The government can help R&D best by encouraging an atmosphere of entrepreneurship and giving tax benefits to R&D investors so money is more likely to flow to the most innovative and original thinkers.	The government should sponsor R&D as part of an all-encompassing plan with specific goals. To accomplish them, massive funds should be channeled to research programs involving many scientists.	The government should allocate money to study the living wilderness so that its beauty and the threat it is under can be brought to public attention

Continuation of Table 1

Question	Administrative Rationalist	Democratic Pragmatist	Economic Rationalist	Ecological Modernizer	Green Romanticist
How do you feel about the service benefit surcharge included into every electric bill?	The surcharge benefits the ratepayers by providing them with a cleaner environment to live in, so it is only fair that they pay it.	Whether or not to accept the surcharge on their energy bills should be up to each community to vote on	The surcharge is not necessary. The best way to fund “green” energy R&D is to give tax breaks to businesses that sponsor it.	The surcharge is a useful item of policy, but to make full use of it, a comprehensive plan of what to research and how is required	The surcharge is a poor and artificial way for the consumerist members of the nature-despoiling society to feel they are doing something to preserve that nature. A reduction in the consumption of electricity would be far more helpful
Do you think that educating people and changing their ideas about electric power generation will better lead to sustainability, or do you think that companies will only alter their production methods and consumers – their buying patterns, when supply problems begin to materialize?	Education is usually the best alternative, because by the time supply prices signal it is time for a change, a lot of damage might have been done already. But a context of regulation, in which sustainable practices are viewed as business’ social duty and companies are held to their responsibilities, is more important than either.	Education empowers communities to demand their rights from the central government, and individuals to exercise their franchise intelligently. To trust too much in the power of supply prices to produce changes in company behavior is to abdicate the duty of individuals and communities to influence business behavior through informed purchasing	Education is likely to create some new demand, but, under most circumstances, the money that makes companies come up with new products and fan the demand higher will not flow into the alternative methods until the prices justify investors in doing so.	The tangible benefits that would result from a proactive transformation of the generation sector would be the best form of education and create a sustainability conscious population while keeping prices down.	Prices are nothing compare to the cost the se “lower” prices are wreaking on the Earth. Education through personal example is the only way to transform people’s hearts, not just modify their behavior in a limited and insufficient context.
In your opinion, what drives companies to be more or less responsible with natural resources and the environment?	Companies need to be held to a high standard of responsibility by the state, otherwise all they will think of is their profit margin	Companies need to have a strong relationship with the community they operate them, so they see responsible behavior as being their own best long-term interests	Companies act responsibly because, in a marketplace full of never-ending competition, reputation for honest and responsible dealings, both with the individual clients and with the larger community, is a business’ most valuable PR asset	Companies act responsible when it is in their best interest to do so. It is up to the government to make it more profitable for them to be responsible than otherwise	Companies don’t act responsible: only people, who might happen to work in a company, “act” in any meaningful sense of the word. And they are responsible if they understand the importance of what is at stake.

2.2 Analyzing the Policy

The literature played a key role in us learning about the policy taking place in Massachusetts. Dryzek included many examples on how the different discourses reacted in certain situations and allowed us to gain a better understanding on how they would appear in society. Using these examples, we analyzed the policies that had taken place in California and described the way they are each a representation of different discourses. In each of the different discourses, examples are provided in order to give you the sense of what each discourse looks like in practice. The discourses mentioned will be described in the next section.

3 Background and Analysis

Since the majority of our paper is analyzing literature while using literature as our background, we felt it would be better to include them both in the same section. The first thing that will be discussed is the different discourses and how they both appear in and affect society. These discourses are the heart of our paper; they describe how we interpreted all of our information and how we finally concluded our findings. After the discourses we talk about the history of the industry to give a sense that change is something that happens all the time to the industry and that deregulation is just another step in its path. Next we will talk about one of the most disturbing cases of deregulation in American history: California. What happened in California set up the reasons some of the legislature in the deregulation act was inserted. Next we will talk about the policy that is occurring in Massachusetts and how the different discourses can be seen in it. Next we will discuss what was discovered in the interviews and how people are reacting to this new deregulated industry. Finally we will describe Massachusetts policy and how the discourses relate to it.

The analysis is broken up into three distinct parts, all of which relate to the deregulation and current condition of Massachusetts. The first part is a literary analysis of other authors and their opinions on both Massachusetts and the first people to begin deregulation, California. Understanding the opinions of other authors allows for a more

diverse perspective of the situation. The second part of the analysis is the observations of Massachusetts policy and how it has both controlled the process of deregulation and how it is set up for a more sustainable economy and ecology. Looking at Massachusetts policy is also important since most of our other information is based on how legislation has dealt with the issue of deregulation and how the different discourses take a role in that issue. Finally, the third analysis is that of the interviews. The interviews give a better understanding of how policy is actually practiced. The interviews also give insight into how each of the different roles of society view the way the deregulation process is working.

3.1 *Dominant Discourses*

We selected 5 of the discourses described by Dryzek as being the most relevant to our analysis of the electric power industry. The list we created contains the following discourses: Administrative rationalist, Ecological modernizer, Economic Rationalist, Democratic Pragmatist and Green romanticist. Each one has their own views about the world around them and each with their own different forms of practice, both of which are described under each discourse. At the end of the discourses there is a table built to exemplify some positions of the discourses in the work force. There is, however, more than just the discourses list below, but we felt that these were the most relevant.

3.1.1 The Administrative Rationalist

The administrative rationalist is the first discourse. To give you a better understanding, and for easier organization, we have categorized the different aspects of the discourse. First, the definition, followed by the relationships, actors and metaphors, then to methods whereby the discourse's beliefs are implemented into policy, and finally we analyze and exemplify the administrative rationalist in practice.

Definition and Classification

The administrative rationalists are people that believe in the power of the informed expert to steer society along the optimum path. They reason that most individuals do not have the information or the specialized training to make rational

decisions on such complex subjects.³ On the other hand, assert the adherents of this discourse, even before environmental issues, in the modern sense this phrase, became a concern, scientists and administrators working together within a structure of bureaucratic control had already dealt with problems ranging from national defense, to the sanitation of cities, to universal public education, to the improvement of agriculture.⁴ On the pre-1960s environmental scene, Administrative Rationalists point to the administration of Gifford Pinchot, the first chief of US Forest Service. Under this man, (who later went on to become the Governor of Pennsylvania) the old trend towards the disappearance of the nation's timber reserves was sharply reversed, and a new trend began, which saw the fraction of US land area covered by forests expand steadily from decade to decade.⁵

With firm faith in the power of expert advice and administrative training buoyed by what they see as past successes, the adherents of Administrative Rationalism remain convinced that, while the problems of pollution and environmental degradation are a new chapter in the story of challenges faced by the modern industrial society, they are not a fundamentally different sort of challenge. Problems such as pollution can be solved by the same methods – that is, by institutionalized expertise combined with social and economic control by an informed hierarchy -- which the typical industrial society had used to deal with challenges before pollution became a primary concern in the 1960's. In other words, the adherents of this discourse (as well as many others) believe that when properly managed, the modern type of industrial economy can grow and expand indefinitely.

In Dryzek's terminology, Administrative Rationalists are adherents of a sub-discourse; classified as part of the larger discourse he names "Environmental Problem

³ Dryzek (1997) page 63: "when [natural environment] issues came to new prominence in the 1960's, they could be readily associated with a public policy tradition which accorded substantial status to scientific expertise as harnessed by the administrative state." Note that it does not state that any other kind of scientific expertise is granted much status.

⁴ Dryzek (1997), page 63

⁵ Dryzek (1997) page 12, see also, www.wikipedia.org, entry for Gifford Pinchot

Solving.”⁶ The larger discourse is itself classified as a branch stemming from a supra-discourse, which Dryzek calls Reformist⁷ (as opposed to Radical) – to be specific, the particular branch of it that follows the Prosaic (as opposed to the Imaginative) approach to finding solutions. That branch is primarily characterized as viewing the damage humans do to the environment as a series of distinct problems that experts, markets, or participants in the democratic process can solve one at a time, rather than as a single fundamental flaw of modern industrial society, which can only be resolved by a fundamental transformation that rejects industrial society’s commitment to economic growth.

As mentioned above, Administrative Rationalists believe in the possibility of indefinite growth of population and economy, which separates them from the prosaic discourses classified in the Radical camp (such as Survivalism), but do not reject the inevitability of conflict between short-sighted business interests on the one hand, and the public’s need for a healthy environment on the other, which separates them from those imaginative discourses that are classified with them under Reformism (such as the Ecological Modernizer discourse.)

In general, Administrative Rationalism is the most successful attempt by the old business⁸ and government elites, who dominated industrial society before the environmentalist movement gathered strength, to go on with business as usual in the new context of widespread public concern for nature and outrage for the damage that this method of doing business has dealt to it over the course of a century.⁹ It must be noted though, that in the United States, the role of the business elite in the formation of regulatory agencies was much smaller than it was in many nations. This smaller role of

⁶ Dryzek (1997) pp. 61-62

⁷ Dryzek (1997), pp. 19-20

⁸ Business in the sense of large corporations of the sort Schumpeter feared would mean the death of entrepreneurial spirit. For these guys, their lobbyist in the government was at least as important as their chief of operations.

⁹ Dryzek (1997), on page 62, says that “Administrative Rationalism captures the dominant governmental response to the initial onset of environmental crisis.”

business accounts for the growing popularity of the Economic Rationalist discourse, which has capitalized on the mutual antagonism between industrial and administrative elites. The reason this antagonism came about can be seen in the history of the legislation that established regulation in the United States and prescribed its actions.

Ontology, Relationships, Actors and Metaphors

The Administrative Rationalist ontology sees the public as shortsighted and impulsive, and the market as guided by Keynes' "animal spirits" rather than Hayek's accurate and precise system of delivering information where it is most needed. The bureaucracy is seen as unglamorous and indispensable "thin gray-suited line" of devoted public servants. Their position of public trust has been earned through their zeal for reason and efficiency and their superior education, which makes them able to see through the short-term concerns that distract most other people. The bureaucrat is seen as being able to stand aside from the entanglements that cloud the situational perception of all other agents, and to make a true appraisal of current conditions, based on carefully verified statistical facts.

In terms of relationships natural to the realities assumed in the ontology, the Administrative Rationalist discourse assumes a hierarchy where information from all sources constantly flows to the top, where it is integrated by a staff of experts into an optimal decision according to a set of strict criteria. It is natural, contends this discourse, for hierarchies of suitably educated public servants to process information better than the chaotic markets driven by blind short-term interest.

The predicted success of such a hierarchy also implies that the lower levels of society are immediately responsive and eternally faithful to the decisions made upstairs, so that the experts can be sure that any policies they promote will be implemented as planned and won't be hindered by any social backlash. Obviously in real life, this soon becomes a major concern, but the regulatory agency still sees the lower tiers as the acted upon and themselves as the actors, with any resistance from below treated as an undesirable aberration that must be contained and brought to heel. From this, another relationship can be discerned: the discourse assumes that a hierarchy of bureaucrats can, by virtue of its superior organization, enforce its regulation of economy and society with

a pervading thoroughness. This last assumption is one that had caused adherents of this discourse the greatest amount of difficulty.

The chief actors in the Administrative Rationalist discourse are the experts, who are given power to change society through their superior knowledge. The experts are empowered to act through the bureaucratic hierarchy, which recognizes their talents and puts them in a position to impose their enlightened policy on the public. The public, faced with environmental (or any other) problems, may demand solutions from the government, but the precise form this policy takes is decided upon by the hierarchy, since only the hierarchy are seen as qualified to predict which solution will have the desired effect. It also acts to gather the information that the experts require in their policy formulations, and to ensure compliance.

All other characters in the story, such as businesspeople, consumers, taxpayers, lobbyists, populist politicians, scientists and journalists are perfectly free to act rationally within their own sphere, but their unawareness of “the big picture” makes this otherwise rational behavior a long-term detriment to the stability and prosperity of civilization. In other words, their role is that of wild horses the administrators and enlightened experts must restrain for the public good and force to pull in tandem with the others. In general, they are actors only in a limited sense: in all contexts in which they are not expert, these characters are rather those acted upon.

The wild horse metaphor brings us to the rhetorical devices, metaphors in particular, that this discourse uses to appeal for support. According to Dryzek, this discourse relies less on metaphors than on such rhetorical devices as pointing to the successes of the system and drawing up horror stories of the various risks, which the unchecked short-sightedness of special interests groups poses to the poor innocent babies, puppies and spotted owls (not to mention the elderly, the middle class, the second-hand smokers, the factory workers, people vulnerable to the rising prices of gas, and so on).

The bureaucrats themselves are not in the forefront of the debate, since a bureaucracy does not resonate with great dramatic appeal to most people. Instead, the appeal is rather something like “leave the people who know what they are doing to do their jobs” combined with a leader who shares the Administrative Rationalist worldview and can be portrayed as a champion of the individual against the special interests willing

to sacrifice the Future of Our Children in the name of short-term advantage.

Methods of Control

There are three different types of control mechanisms which members of the Administrative Rationalist discourse use to implement their views into real changes: the Bureaucratic Apparatus, whose task is to assign its agents various tasks within and outside the hierarchy and to monitor their successes and setbacks, the Analytical Tools, which are used to judge the likely effects of specific regulations and finally Lawmaking, Regulatory Plans and Enforcement, which provides the Bureaucratic.

Bureaucratic Apparatus

The assumption of the Administrative Rationalist that a hierarchy of trained bureaucrats can successfully enforce the experts' policy decisions on every level of society requires any society where this discourse is dominant to adopt certain very distinctive features. The most prominent of these is an elaborate, arcane, and frequently ponderous and micromanaging apparatus of inspectors, administrators, and analysts existing on every level, from national (in this country, Federal), to state, to municipal.¹⁰

Of course this is nothing surprising: this sort of apparatus has been a ubiquitous characteristic of the modern industrial society for a century and, as was mentioned above, the Administrative Rationalist discourse is essentially an attempt by the industrial-bureaucratic elites of the 1950's to deal with a new problem using old methods. Nevertheless, what characterizes societies where this discourse is pre-eminent to this day is the degree to which the society relies on stacked tiers of pervasive functionaries and closed ranks of fussy micromanagers, as opposed to other methods of information processing and allocation that have become increasingly important in other societies since the 1960's¹¹. Recently, there have been many attempts in most First World countries to make such bureaucracies less rigid and more transparent – attempts which are characteristic of other discourses, notably that of the Ecological Modernizers, gaining

¹⁰ Dryzek (1997) pp. 65-66

¹¹ Patricia W. Ingraham and Donald F. Kettl, ed (1992) *Agenda for Excellence: Public Service in*

a position of increasing dominance within those societies.

In the United States, the federal level of control relies on the actions of various departments belonging to the executive branch of the government. Among these, the Environmental Protection Agency, the Center for Disease Control, the Department of the Interior, the Department of Agriculture, and the Department of Energy are pre-eminent.

These departments examine the larger question, such as emissions produced by electric power plants, according to the mandate of each separate department. The information is then brought together and integrated during briefings of legislators and executive officials, as well as during interdepartmental conferences.

For example, if we have one giant coal-burning plant emitting unacceptable levels of polluting by-products, the actual pollutant levels and how they compare to acceptable standards of air quality, would be investigated, assessed, measured, and rated by the Environmental Protection Agency. Various questions regarding the power plant itself -- how indispensable it is, how much it would cost to sequester the pollutants, whether it is feasible to switch to an alternate fuel supply, and so forth -- would be looked at by the Department of Energy. The Center for Disease Control would seek to determine how much these pollutants are hurting the health of US residents, and how these statistics break down in terms of specific diseases caused and the number of deaths from each disease, as well as the probability with which fluctuations in disease frequencies can be assigned to the plant's particular emissions. The Department of the Interior, the Department of Agriculture, and the EPA would share the responsibility of determining the effects of the pollutants on the non-human parts of the ecosystem, such as acid rain damaging forests, or mercury isotopes settling out into lakes and then accumulating in the bodily tissues of fish and birds.

Analytical Tools

The primary tools of assessment used by the agencies described above are cost-and-benefit calculation and risk analysis. Both of these instruments have a distinguished history in resource management: in fact the first agency to use cost-and-benefit valuations

was the US Bureau of Reclamation (a subdivision of the Department of the Interior) working together with the US Army Corps of Engineers. The two organizations developed cost-and-benefit analysis in the 1950's using it to analyze and justify the construction of the dams they were assigned to build.¹² Later, President Reagan's Executive Order 12291 signed in 1981 as part of his effort to rein in private sector regulation he saw as excessive, required all significant Federal regulations (including environmental ones) to pass a cost-benefit test with the Office of Management and Budget.¹³ This cemented the role of cost-benefit analysis as the fundamental tool by which any agency responsible for enforcement of environmental law seeks to influence the laws to be made on the subject or to justify the regulations it drafts for the purpose of implementing this law.

The principle of cost-benefit analysis lies in converting all effects of the action being analyzed into nominal dollars and then adding up the negatives and the positives. This is done according to the following steps:

1. Identify at least two policy options (one being "Do nothing")
2. For each option, list all desirable and all undesirable effects.
3. For each item for which a market price can be calculated, price it accordingly
4. For each item for which market prices cannot be calculated, use "shadow pricing" (list all assumptions made during the shadow pricing, include with item price.)¹⁴

¹² Dryzek (1997) page 71

¹³ Dryzek (1997) page 72

¹⁴ This is a very sensitive part of the analysis. To illustrate the mistakes possible in working out the "shadow price" of a cost or benefit, Dryzek (page 72) tells the story of a commission in Britain that was siting an airport. A centuries-old church, which would have had to be demolished were the airport built on the site the commission proposed, was priced using the increased travel time churchgoers would have to spend getting to more distant churches! The commission's site was duly rejected by the British government.

5. Use a discount rate (include justification of rate used) to convert all costs and benefits that are predicted to occur in the future into present dollars.
6. Add up positives with negatives for each option.
7. Choose option with the greatest net benefit.

Countless books have been written on the importance of different factors in assigning some item a “shadow price,” as well as on the selection of proper discount rate in measuring the benefits of events likely to happen in the future. It is obvious that though both of these are readily calculable themselves, they depend on factors outside the scope of the usual type of quantitative analysis, such as the discourse to which the analyst, the analyst’s client, the official reviewing the client’s proposal, and the different people affected by the potential outcome all respectively subscribe, and the values they hold important in life.¹⁵

The second instrument used by the agencies in formulating policy and advising senior department officials, Congress and the President, is the related discipline of risk analysis. This is used to quantify both the probability of an undesirable event occurring (usually this is done by failure testing of engineering equipment, toxin testing of animals, and so forth, combined with studies of statistical correlation)¹⁶ and the degree to which that event will harm people and the environment (this usually involves detailed studies of past occurrences, or using laboratory data to program a computer model for a simulated catastrophe.) In that sense risk analysis is a lot like cost-benefit assessments. The difference is that risk analysis focuses on the negatives, and seeks to answer questions of how acceptable each particular risk is. For example, the possibility of a nuclear accident

¹⁵ An anecdote on the topic goes like this: aliens make you a business proposal. They intend to buy Earth, taking possession 1000 years from now. In the meantime, they will pay you with wonderful alien technology and a guaranteed 500-year lifespan and perfect health for all humans alive on Earth today plus these humans’ children. These children will all be born sterile. By the time 1000 years are past, the Earth will be nice and empty for the aliens to take up the management of their new real estate. The punch line is that according to the Harvard business school, this is the deal of a lifetime!

¹⁶ Dryzek (1997) page 73, comments: “Both instruments can be a bit blunt.”

in a properly managed nuclear power plant is vanishingly small, but if such an accident does happen, the consequences are catastrophic enough that very few people find it acceptable.

On the other hand, a coal-fired power plant has a 100% probability of emitting greenhouse gases (which have been proven pretty conclusively to contribute to global warming), of emitting toxic mercury isotopes in its exhaust (which bio-accumulates in marine life, with a 100% probability of harming the health of anyone eating seafood), and of dumping more background radiation into the atmosphere than a nuclear power plant normally does. This is considered if not exactly acceptable then at least tolerable, since on any given day, any given coal-fired power plant does not emit enough pollutants to kill anyone, at least not in a way that can be traced to the nuclear power plant as directly as the deaths after Chernobyl were traced to radiation. This public perception of risk is what shapes the political reality of environmental policy, while the scientific perception of the costs and benefits (on any given day, provided it is managed properly, the nuclear power plant is infinitely healthier to live downwind from than a coal power plant is) may often conflict with it.

Naturally the sort of disaster whose very possibility a culture would consider unacceptable even if there were virtually no chance of it happening varies from discourse to discourse. For example, while most US citizens would rather tolerate a coal-fired power plant than a nuclear one, in France, these conditions are reversed. The public trusts the expertise of the nuclear power plant managers to avoid a local Chernobyl, while having soot and mercury isotopes polluting the *terroir* of the wine country downwind would probably lead to the power plant being charged by a rioting mob.

Analysts working for the EPA, Center for Disease Control, and other regulatory agencies usually use both cost-benefit and risk analysis, combining the two to gain a full picture of the situation. This is done by taking each possible action and attempting to calculate the probability of each possible outcome (or, rather, as many different consequences as is practical.) Each outcome that is judged likely enough is then subjected to cost-benefit analysis as before.

The situation is complicated by the fact that some outcomes are independent of others and other outcomes interact to make each other either more or less likely; systems

dynamics usually has to be employed in such cases to trace the pathways of mutual influence. When all outcomes that have a reasonable probability of occurring are considered, the analyst moves on to the next possible action. If this is done right, the policy planners can make decisions based both on how beneficial an action's possible outcome would be, and the probability of it occurring. Of course the probabilities themselves depend on other probabilities of other events; an attempt to analyze them all would take an infinite number of iterations. What modern policy-makers get is a reasonable approximation.

Lawmaking, Regulatory Plans, and Enforcement

Once the analysts' reports are in, the various departments and agencies of the executive branch would then make their findings available to the US Congress, so legislative statutes could be passed to address the problem, to the White House, so the President would know exactly what steps to take to ensure compliance with these statutes, and to the Supreme Court, so that the Justices would have all the relevant information regarding any cases they might have to try that challenge the statutes. Of course both members of Congress and Supreme Court Justices also have their own research staffs, to supply them with required information on any issue that must be addressed urgently.

Once the information has been collected and the Legislative and Executive branches have processed it into policy, which is then upheld by the Supreme Court, the policy must now be enforced. This is mostly done by the EPA, which maintains regional offices across the nation. The central office, headed by the EPA Administrator, formulates regulatory plans which take into account the official policy the agency must enforce, the need for concerted action between different regional offices, and the local needs each office must address: the regulatory plan is then passed downstairs. The regional offices maintain liaisons with state EPA organizations, municipal councils, and local industry, and together all the actors involved develop detailed plans of bringing the local industry, the particular city, the region's small business sector, or anything else the

agency decides to focus its efforts on, in accord with Federal environmental standards¹⁷.

At the same time, other, non-regional EPA offices address specific issues (such as Air and Radiation, or Prevention, Pesticides, and Toxic Substances) work throughout the nation to address concerns sector by sector. They usually maintain liaisons with major corporations involved in the non-regional office's sector: for example Air and Radiation pays close attention to carmakers, Prevention, Pesticides and Toxic substances has representatives keeping track of pesticide manufacture and use across the nation, and so forth.

Regular inspections and audits ensure subsequent compliance. Factories, mines, power plants and other industrial operations must submit environmental impact statements that the EPA finds satisfactory, and then demonstrate their good faith and continued efforts during subsequent inspections. In that case, the enterprise is issued various permits to continue with its plan of operations, or to install the different pieces of equipment it needs for that plan. If all inspections and audits are passed, the permits are periodically renewed, while those enterprises already in operation failing to meet Federal standards, and are penalized with various sanctions. (The EPA also has other duties as well, such as the operation of research labs, but those are not directly involved in the implementation of bureaucratic control.)¹⁸

On the state level, as mentioned above, there are EPA organizations instituted by individual state governments. Their main purpose is to address issues that do not come under Federal EPA jurisdiction, specifically those enterprises whose products and by-products do not cross state boundaries, and so cannot be considered under the Constitutional clauses of interstate commerce and interstate disputes. These clauses directly authorize the federal government to intervene, since the interests of more than one state's residents are involved -- and by causing any change in air or water quality across a state line, an enterprise implicitly impacts quality of life and economic activity in that other state, bringing its operations under federal jurisdiction. On the other hand, an

¹⁷ <http://www.epa.gov/ormisbol/pubs.htm#gp>

¹⁸ www.epa.gov

enterprise which cannot be proven to affect anything outside its own state's borders is much harder for the federal EPA to confront directly, which is where the state organizations come in.

In addition, state EPAs deal with environmental issues specific to a given state -- such as the large number of threatened endemic species in Hawaii, the threatened wetlands in Maryland, and the deposits of environmental pollutants that settle on Massachusetts from the winds borne out of the Midwest states where so many coal-fired power plants are located. They also seek to ensure compliance of mines, factories, power plants, and other regulated agents with pollution standards set by the state, which may be different from, or higher than, those standards the federal EPA enforces. As before, companies seeking approval for an industrial or a construction project must submit statements and hope the state EPA grants them a license. On occasion, the federal EPA, if overwhelmed with many tasks requiring attention, cedes jurisdiction of some of these tasks to the EPA agencies of relevant states, often as a result of a petition by one or more state.

On the local level, a city government often has one or more office with names such as the Environmental Protection Committee, or Environmental Design and Protection Bureau. Such offices address issues specific to urban concerns, such as air and water quality, the sewer system, the runoff, if there is one, of polluting substances into the soil and water of the surrounding suburbs, etc. This branch or branches of city government is responsible for ensuring city ordinances, which, once again, can be different from state or federal statutes. Sometimes it also seeks to pre-empt state and federal EPAs, and stop the city from getting bad press in official reports by addressing EPA concerns before the EPA finds it necessary to turn its attention to the sector or industry in question. Usually municipal governments work closely with state and federal EPA, often implementing specific plans for the city developed by these agencies.

Administrative Rationalism in Practice

In both federal and state-level cases, the important thing to remember is that bureaucracies, like most complex systems, evolve over time, usually according to a sort of general law. This "law" derives from the basic nature of the bureaucracy as a system

of processing information, which naturally seeks to bring as much of this information as possible within its purview and as many different activities as possible under its control. This is not done in the name of some grand scheme to drown the world in red tape, but simply because the greatest threat to the smooth functioning of a bureaucracy comes from entities and events it either did not know nor had no jurisdiction over.

Thus, in any particular case, the bureaucrat perceives more information and more control as preferable to less and, as the bureaucracy's control extends, the tasks pile up and the amount of time to do them in decreases in proportion. Paradoxically, the more information must be collected, the less important that collection becomes, until it is only a secondary task of the hierarchy (though it never stops so much as becomes re-defined.) In an organization as large as a modern bureaucracy typically becomes after a decade or two of growth, most of this information is never analyzed in context, anyway, so that any given piece of data can provide only cursory, and frequently misleading, indication of the situation on the ground. Even the collection of many such pieces of data may very well lead an analyst badly astray by *not* mentioning all the things the writer of each report had to omit in an attempt to make the information manageable¹⁹.

The mature bureaucracy's primary activity becomes an exercise of control over the economic and social agents it regulates, and the gathering of information becomes less important for its own sake and more of a tool to let all the other agents participating in the process being regulated feel the extent of the bureaucracy's control over them. Again this is not done from ill will, but simply because the bureaucracy's work is made easier if it does not encounter resistance from lobbyists and lawsuits. By this point, the importance of formulating policies apt to the context is de-emphasized (since no one can keep track of all the myriad different contexts) in favor of a strict insistence on the subject agents' strict adherence to the letter of whatever policy is in place at the moment. As this evolution proceeds, the picture of the dedicated and well-informed brotherhood of bureaucrats painted by the Administrative Rationalist discourse often falls increasingly

¹⁹ Razeen Sally (1997) *Ama-gi*, Vol. 1, issue 2 "What Is Liberalism?", available online at www.hayek.org

short of reality²⁰.

Another problem with the Administrative Rationalist ontology of informed experts collaborating with enlightened administrators for the public good is that in a modern industrial society, the concept of “public good” is itself predicated on the smooth operation of the industrial sector. A good example of the consequences that follow when the regulators forget this fact would be the Reagan years in the United States, when frustration with a regulatory policy that was widely perceived as harmful to employment and prosperity put a government in power that, during Ronald Reagan’s first term, certainly did its best to curtail the power of the EPA as far as possible.²¹

As administrators recognize this fact, this allows industries that deem themselves indispensable to society’s economic or strategic interests to get a foot in the door for obtaining official exemptions from the rules and obligations that smaller businesses must faithfully adhere to.²² A bureaucracy not being a monolithic hive mind, some administrators will, even if we assume no other motivation than the recognition of the need for a healthy industry, be more sympathetic towards these claims than others, making the application of environmental policy increasingly more inconsistent. The bureaucracy becomes like the proverbial spider-web that can only trap small flies while the larger ones rip through it and fly away.

In other words, in the absence of an objective force, such as the market, or perhaps a direct expression of public support, to drive the economy towards a solution that satisfies the needs of the industry without sacrificing the needs of the environment,

²⁰ David Landis (1998) *The Wealth and Poverty of Nations: Why Some Are So Rich and Some So Poor* W.W. Norton and Co. New York, NY.

²¹ Dryzek (1997) pp. 54-56

²² Dryzek (1997) page 66 “... regulatory agencies that were captured by the very agencies they were supposed to be regulating (so the trucking industry controlled the Interstate Commerce Commission, the food industry controlled the Food and Drug Administration.)” Elsewhere (pp. 64-65) Dryzek speaks of the US Forest Service becoming essentially a public subsidy of the timber industry, making roads into National Forests at public expense so that it would be easier for logging companies to remove the timber they harvest. Dryzek concludes that “Welfare logging of this sort presumably has Gifford Pinchot turning in his grave.”

the Administrative Rationalist approach, having only prescriptive regulations to offer in place of an objectively verifiable optimal course, constantly risks being trapped between the Scylla of public backlash and the Charybdis of inconsistency and ineffectuality (which is almost guaranteed to generate a different public backlash sooner or later.)

In Europe, according to Dryzek,²³ this weakness of the Administrative Rationalist discourse is dealt with in two different ways. First of all, European, particularly British regulatory bodies are much likelier to ask a neutral scientific organization, such as the Royal Society, to separate fact from fiction regarding some particular issue. This makes them much less likely than the US regulatory agencies to get mired down in such debates as the 20-year American epic of trying to figure out if the rising average temperatures across the globe, combined with melting polar ice and a strong correlation with carbon dioxide being emitted in greater numbers than the globe's plant biomass can absorb, really implies there is a global warming. This approach fails to deal with the problem that even if the facts are known, the administrators still have to devise a way to deal with these facts that hurts neither the economy nor the environment, and that buck is much harder to pass to a science laboratory.

The second European solution is to work closely with the industries themselves, inviting them to meetings where the regulatory policy is developed, and taking their suggestions into account to begin with, rather than passing a regulation and immediately being faced with a barrage of petitions from industries claiming that the new rules are making it impossible for them to operate, or to make a profit, or to supply the growth in demand, or do any of these things without laying off some catastrophic number of employees. The history of European culture, with its greater emphasis on subordination of private profit to public requirements, obedience, and social hierarchy than can be seen in the United States, makes it possible for the regulators to maintain the upper hand in these negotiations and establish regulations that the industry can live with without turning the process into a tail-wags-the-dog situation.

Unfortunately, the concessions made by the regulators to industry may or may not

²³ Dryzek (1997) pp. 67-68, 70

be enough to offset negative economic impacts; yet by agreeing to participate in the discussion in an advisory capacity, but still feeling obligated to accept the final verdict of the regulating body, the representatives of industry forces essentially sign away their moral right to challenge any future effects of that regulation that may still prove harmful to their interests. This can result in industries, now unable to complain to the government, quietly passing the costs of regulation down to the consumer, resulting in unnecessarily high prices and supply-side constraints.

At the same time, the fact remains that, given the ontological assumptions of the discourse and the consequent decisions in policy formulation, regulation of industry means losses to that industry. By staying within the boundaries of stresses they can impose on the industrial economy without provoking a recession and subsequent reaction to environmental reform, the regulators run the risk of limiting themselves to half measures: actions that can assuage their consciences by slowing the degradation of natural environment and minimizing its impact on public health, but leave the task of actually stopping and reversing that degradation to a more informed generation with wiser experts. In the meantime, the very negative effects that the regulatory agency was formed to combat still continue to accumulate, slower, but no less certain.

These inadequate solutions to the dilemma of industry-regulator relationship eventually caused the discourse of Administrative Rationalism in Europe to evolve, giving birth to discourses of sustainability, such as the Ecological Modernizer discourse, which will be treated later in this document.

In the United States, the precautions against inconsistent enforcement and public backlash took the form of extreme Congressional micromanagement.²⁴ Essentially, the obligations of the EPA and other regulatory agencies, the courses they were to take, the impact statements and inspections they were to demand, were all spelled out by Congress in such laws as the Clean Air Act, Water Pollution Control Act, and Toxic Substances Control Act. The targets for pollution reduction, matched up with dates by which each target must be met, were included in the body of the law, and the regulators were given

²⁴ Dryzek (1997), page 66

very little room to accept excuses from industries. The philosophy was: if you “hold their feet to the fire” (actual metaphor in common usage among political advocates of regulation during this period) the industrialists will produce results, using their technological and capital wealth to meet regulatory targets. The regulators in this scenario were essentially assigned the role of *not* listening to the subjects of regulation.

Note that this is not pure Administrative Rationalism, which usually leaves more room for deals between industry and administration, bringing the possible in accord with the desirable – in the United States version, regulatory institutions started out greatly influenced by the statutes which established their responsibilities, and these were more informed by populist discourses such as Democratic Pragmatism and to a smaller degree by Survivalism, Green Radicalism and other discourses that saw industry as the implacable enemy and New Deal type of regulation as easy prey for industry takeover. Despite that, it can be argued that the paradigm of environmental regulation in the United States underwent a shift towards a purer form of Administrative Rationalism later, before moving on to more imaginative discourses in the 1990’s.

In the end, this lack of discretionary authority made the EPA into an industry bogeyman, provoking the infamous backlash of the Reagan years. The Congress, which was controlled by Ronald Reagan’s political opponents, responded by making the laws governing EPA work even more intensive and aggressive.²⁵ This created an atmosphere of the eternal lawsuit, where industry sued the EPA for excessive stringency and arbitrary action violating (as they allege) Constitutional guarantees of due process, while environmentalists sued the EPA for not being stringent enough. At the same time, the EPA sued industries for not complying, and industries devoted teams of legal experts to preparing preventive lawsuits for “defamation” against any group that might seek to bring the EPA down on them.²⁶

This state of things persisted through the early and middle 1980’s until it became obvious that things could no longer go on this way. When the first President Bush took

²⁵ Dryzek (1997), page 66

²⁶ Dryzek (1997) page 67

office in 1989, he made it clear that he was not going to continue the previous administration's confrontational policy, and did his best to defuse matters between Congress and the executive branch. This combined with strong pressure from industries that the US government considered strategically vital, such as steel and aerospace.

By 1990, the EPA was completing a shift towards greater autonomy, which was begun by William D. Ruckelshaus during his second tenure as EPA head, between May of 1983 and February of 1985. Ruckelshaus' cohort of appointees were occupying senior posts by then, and most of them recognized that if the EPA could get any useful work done at all, it needed to be together with the nation's industry and in opposition to it. This resulted in purer Administrative Rationalist practices taking hold. At the same time, the old cohort of populist Democrats in Congress was getting older and, in some opinions, wiser: no longer as interested in confronting the evils of industry as in taming it and rendering the onetime evils benign. These new Democrats were more willing to allow industrial elites to come to accommodation with regulatory elites, making the EPA of George H. W. Bush's term more like the analogous agencies of Europe used to be (by this point the Europeans were moving towards the Ecological Modernizer discourse.)

Eventually the EPA likewise moved in the Ecological Modernizer direction, largely under the aegis of Al Gore, who was one of that discourse's foremost proponents on the left-wing side of the US political spectrum.

The regulatory experience of the United States indicates that this culture is less suited to the Administrative Rationalist discourse than Europe. Americans are less inclined to trust the sort of inclusive deal-making that went on between the industrial and the administrative elites in Europe: right-wingers would hate it for its implicit assumption that the industrialists are there to supply administrators with advice and accept their verdict, left-wingers would perceive the regulators as betraying the interests of the people to make shady deals in smoke-filled rooms, and both left-wingers in general and the libertarian subset of right-wingers would detest the corporate welfare such deal-making implies. While such horse-trading is not itself without faults, and it is true that the way it is done in Europe can lead to increased supply-side constraints in the economy and inadequate measures in the protection of the environment, the US approach, characterized

by suspicious and bullying attitudes on the part of Congress, resulted in widespread outrage among business circles through the 1970's, the Promethean backlash of Reagan's first term, and the lawsuit paralysis of the 1980's, which no doubt saw many lost opportunities to improve the condition of the nation's natural environment.

3.1.2 Democratic Pragmatist

Much like what was done for the Administrative Rationalist, we have categorized the different aspects of the discourse. We have also added an ideological pedigree to the description because we felt that it was important for understanding the way the Democratic Pragmatist thinks.

Classification

This is another discourse Dryzek classifies with the Administrative Rationalists under the larger discourse of Environmental Problem Solving, within the branch of the Reformist supra-discourse that chooses a prosaic, rather than imaginative, approach to meeting the challenges posed by the recognition of the environment as a major public concern. As Administrative Rationalists, Democratic Pragmatists believe that the modern industrial society and the economy it is based on can go on growing without utterly destroying the natural environment, but, also like Administrative Rationalists, they believe that absent an effective restraint, business interests are doomed to conflict with environmental needs. The difference between the two discourses lies in the form they believe that restraint might take in order to be effective.

Rather than a retrenchment of the old corporate-bureaucratic elite in the face of the new social challenge, which the Administrative Rationalist discourse essentially is, the Democratic Pragmatist discourse is a reaction of the traditional culture of public debate and transparency (as exemplified by, for example, the New England town meeting, or the soapbox in London's Hyde park) to the efforts of other discourses to do things to the public for its own good.

Ideological Pedigree

Democratic Pragmatism as a discourse has its origin in the concept of the "open

society” as elaborated by Henri Bergson, developed by Karl Popper, and currently advocated (as he alleges) by George Soros.

Bergson, a French philosopher of the late 19th and early 20th century (and the recipient of the Nobel Prize for Literature for 1927), advocated a principle of “creative evolution” that had a considerable influence on the thought of William James, the founder of the Pragmatist school of thought in the United States (though James confessed that he was baffled by a lot of Bergson’s more idealistic utterances.) In his turn, Bergson quoted several statements from James’ psychological articles in his seminal 1889 work *The Immediate Givens of the Conscience*. Thus the thoughts of the French and the United States philosopher ran on parallel tracks from the beginning²⁷.

In his later works, entitled *Creative Evolution* (1907) and *Two Sources of Morality and Religion* (1932), Bergson advocated a society whose social order evolved with the creative strivings of the various people who lived in it. In other words, changes in the microcosm of each individual human soul would act as an engine of transformation in the social macrocosm. Among the things Bergson cautioned the human mind against is the blind attempt to reduce the larger world in which the mind existed as a single part to some logical system contained within that part (e.g. the mind.) Since no system of logic could account for all of existence, it followed that as many individual creative minds each arrived at some new truth, it would benefit them all if the system within which they existed (e.g. the society) was responsive to these truths and evolved as each mind contributed its own truth to it. The society could thus serve as an integrator of creativity.

Karl Popper put Bergson’s idealism on a rigorous scientific footing in his 1945 book *The Open Society and Its Enemies*. As a philosopher of science, Popper argued that on no subject of study can we arrive at the Truth, beyond which there is nothing left to discover: rather we can arrive at a hypothesis that can be falsified – that is, shown to be false if certain conditions are met (as in the course of an experiment.) If the experiment is performed and the hypothesis is not proven false, it is allowed to stand until somebody

²⁷ www.wikipedia.org entries for “Henry Bergson” and “William James”

devises an experiment that does prove it false successfully. But even if it stands undisproven for a hundred or a thousand years, we cannot prove it True.

In the realm of psychology and sociology, Popper noticed various would-be reformers and “enlighteners” who made claims impossible to prove false (that is, claims that could explain any event within the context of their own claims about social and human nature, thus they could be utterly inconsistent with any part of reality but still consistent within themselves.) This was not disturbing in the case of movements that operated in a sphere science inherently could not touch, such as the various religions. Indeed Popper goes to some pains to point out that a statement could be non-falsifiable but still meaningful, and often valuable. On the other hand, some of the new movements challenging the social order in Popper’s time sought intellectual credit for themselves by claiming to be “scientific.” Among these, Marxism and radical nationalism were the chief culprits, and by 1945 they were already responsible for hundreds of millions of deaths between them – and more lives wrecked forever, all in the name of their alleged truths that their adherents constantly had to assert with the mouths of cannons.

Popper sought to combat the tendency of 20th century societies to fall prey to such claims, but he was wise enough to see that merely repressing the ideologies was not enough – the True Believers had to be discredited in the eyes of people looking for answers, not merely periodically arrested. To create social conditions that fanatics could not exploit, Popper sought the answer in a society that, first and foremost, made no claim to being the product of “inexorable truths of historical development.” “No society can predict, scientifically, its own future states of knowledge” was his primary assertion in social sciences. Since no one could scientifically predict how societies should be operated and social policy crafted with the knowledge humanity will have a hundred, or ten, or even one year from now, the logical thing to do would be to allow the advocates of every possible kind of policy to compete against each other, seeking to attract a following in a transparent and open marketplace of ideas.

At any particular point in the evolution of such a society as Popper postulates, if the majority of citizens disagreed with their government, they should encounter no obstacles in an attempt to remove this government and replace it with an alternative, provided the new government agrees to assume the same risk in exchange. With the

power to choose freely, and with no government having the power, even if it had the intention, to prohibit alternative ideologies from attracting followers, society would never be one thing or the other: it would rather be a mix of different ideologies, each holding a measure of power proportional to its current appeal with the voters, constantly trying to get more at each other's expense. Aside from the basic concept of competition keeping them honest, the experience with different ideologies is likely to make voters too sophisticated to fall for any particular ideology's attempt to bamboozle them – Popper seems to have envisioned each voter as a habitual Socrates, catching would-be saviors of Truth and Justice in the web of their own claims²⁸.

A leading modern propagandist of the Open Society is the well-known billionaire and philanthropist George Soros. The degree to which he is committed to a society that is truly open, rather than open to his manipulations, is currently being debated; suffice it to say that his attempts to evict George Bush from the Oval Office won him a lot of friends and a lot of enemies. In any event, his organization, known as the Open Society Institute, has truly done outstanding work in promoting transparency and open government in the post-Communist societies of Eastern Europe. It is perhaps ironic that he has been so dismissive of the present administration's successes in promoting the same values in the Middle East.

Ontology, Relationships, Actors and Metaphors

The Democratic Pragmatist knows, essentially, that people are not robots. This discourse does not believe that isolated policy wonks will be able to deal with the unforeseen results that are sure to arise from their policies, and that they are unlikely to produce policies that will uniformly produce optimum results in every on-the-ground situation. What worked in one case may be quite inappropriate in another, but an expert who deals in generalities from several hierarchal removes above the situation may not be aware of the circumstances that create the need for a revision. The description of a

²⁸ Charles E. Lindblom (1965) *The Intelligence of Democracy: Decision Making Through Mutual Adjustment*, Free Press, New York, NY

typical bureaucracy's life cycle cited above, with the hierarchy evolving to assume more control of everything and understand less of anything, is a Democratic Pragmatist's favorite parable. Moreover, according to this discourse, even a well-informed policy forced down the public's throat will fail of its purpose for reasons the bureaucracy can't affect. Quite often, believe the Democratic Pragmatists, policies imposed from above will encounter resistance and circumvention from the people whose interests they threaten, and thus will not achieve the desired results.²⁹

Because of this, the Democratic Pragmatists believe that the people directly involved in the future changes must have the information to fully comprehend them and the power to decide on their implementation. A Democratic Pragmatist is likely to be a grassroots activist, working on changing their community one practical step at a time. This discourse emphasizes the power of the individual to make informed decisions and to convince others. Nevertheless, Democratic Pragmatists share with Administrative Rationalists a firm belief in the power of informed social action, though they disagree as to the origin of this power.

Just as the ontology of Democratic Pragmatism is founded in the firm belief in the inability of a reductionist top-down hierarchy to govern living individuals, it is equally fundamental to this ontology to recognize that the government and the society are not monoliths, and that there are composed of disparate individuals just as much as the governed. The Democratic Pragmatist ontology sees the community as the sum of many active, but independent and individualistic participants, and the government, and whatever policy the government pursues, as the product of multiple decision processes taking place in a multitude of citizen minds, each with its own one-of-a-kind perspective.

From postulate of government and policy as resultants of individual decisions, it follows that when policy produces results that cause unhappiness among a great number of citizens, there can (barring special cases such as tyranny, or mass illiteracy and

²⁹ Dryzek writes (page 11, referring to the emerging dominance of the Ecological Modernizer discourse in the Netherlands through the 1980's) "... established state and corporate actors resisted. These actors may have conceded at the level of discourse, but their particular interests subsequently led them to stick to more established policy practices."

ignorance, that prevent people from acting) be two reasons for this: either a large number of citizens do not care enough about the democratic process to articulate their wishes, or they do not take sufficient responsibility to inform themselves about the issue and make sure that their decisions are such as to produce the desired results. In one case, the apathetic citizens are robbed of their unused decision-making powers by a bureaucratic establishment representing the interests of a small group in power (whatever this group may be). In the other, the citizens vote through some disastrous measure, such as the citizens of Weimar Germany voting in the Third Reich because they thought it would bring them stability and a prosperous economy.

Both problems, claim Democratic Pragmatists, come about because people do not experience the results of policy as the direct outcome of their actions. If people truly felt they could change things and make their individual concerns and wishes felt in the actions the community finally takes, they would be less willing to leave the decisions to the bureaucrats. And if they realized that, by making a wrong decision, it is themselves they are condemning to live with the results, and that trying to abdicate this power will not suffice to redirect the consequences to fall on anybody else's shoulders, they would take action to inform themselves of the facts before making their voices heard. In other words, say the Democratic Pragmatists, the more people participate in crafting social, economic, environmental, or any other policy, the better they will be at it, and the more educated they will eventually become on all the subjects being debated. As an ecosystem or a free market, democracy, believes these people, is a self-regulating, self-upgrading, self-adjusting evolving system. Any errors in judgment, unsatisfied minorities, or disastrous unforeseen consequences that the first iteration of the participatory process might produce will, provided the process itself remains viable, be ameliorated over its subsequent iterations, as open dialogue between participants spreads the relevant information through the voting blocks that previously failed to include it in their decision-making.³⁰

Note that the role of experts is not necessarily dismissed. A public that is

³⁰ Charles E. Lindblom (1965) *ibid.*

concerned enough about the consequences of inaction will take the trouble to research the issue and debate it in a number of forums, from newspapers to newsgroups, which will give anybody with scientific credentials or experience in the subject ample opportunity to voice their views and educate the people on the facts. The difference is that in the case when a multiplicity of forums exists, debating the matter simultaneously, together they will be able to draw in a greater variety of opinions, and so allow the experts to receive a greater variety of input for their analysis. At the same time, claim the Democratic Pragmatists, there is less danger of any single ideology becoming entrenched and persisting with policies that are not producing results, as all too often happens in a bureaucratic hierarchy. Since all the experts will know that the public expects their allegedly greater insights to produce workable solutions, and will not hesitate to turn them out on their ear if they promise without delivering, they will be less likely to commit themselves to dogma and more likely to exchange ideas with those holding a different point of view.

In its turn, if the public knows that it can't use "bad experts" as a scapegoat, given that these experts are only given their mandate through the choice of the public itself, such a public would be less likely to turn to charlatans and demagogues in its search for solutions. Individuals comprising such a public would set greater store on education and self-improvement, and would be less susceptible than most to the temptation of the proverbial "easy, simple and wrong" solution for every problem. And of course, provided that the society is sufficiently decentralized to avoid the public perception that all problems are being dealt with by government nabobs much too remote for the individual to reach, it is also sufficiently decentralized for the individual communities to serve as autonomous social laboratories, dealing with local problems through direct participatory democracy. The harsh lessons of personal responsibility taught by such a school would be more than enough to keep the public from following after a demagogue in matters of national importance.

In short, the Democratic Pragmatist ontology recognizes that society is made up of unique individuals and policy is composed of a multiplicity of opinions and personal agendas, concerns and actions. The third entity the ontology recognizes is the public forum, existing in a multitude of incarnations from the local to the national, from those

dealing with a specific sector, question, or proposal, to others dealing with larger questions that integrate the concerns of many sectors, social groups, and economic agents. The forum is what makes it possible for the democratic society to integrate information better than a bureaucratic one, to provide citizens access to debate and provide the administrators access to opinions and facts the hierarchical structure of the bureaucracy would not otherwise allow them to obtain. It also provides the school in which a participant learns the responsibility that is necessary for a functioning democracy: since the forum allows all to speak, no one has an excuse for staying silent or talking without finding out the facts of the matter.

Of course the fourth entity recognized by the discourse is the legitimization of the debate and its conclusion through elections. The elections essentially tell the winners that they have expressed what they want, and now, according to H.L. Mencken's famous definition of democracy "deserve to get it good and hard." They also let the losers know that the proposal of their opponents must now go through the crucible of real-world applications if their victory is to be justified, so that if the losers still believe the winners are wrong, the election's outcome is their best way to demonstrate it to doubters. In this way, elections both set the battlefield for future clashes and make sure that the division between factions remains limited to debate.

The principal relationships recognized by Democratic Pragmatism between these ontological entities, are those of competition, cooperation, and equality. The equality is not formulated so as to deny that some people naturally know more about the matter than others – the primitive statement that 'anybody's opinion is as good as anybody else's' is a caricature of Democratic Pragmatism drawn by those who do not wish to address its points honestly. If it was ever true that large numbers of people held to it, they no longer do today, at least not in any First World nations. Rather the equality is one of being able to contribute.

Just as Economic Rationalism (to be discussed later) does not set much store on the equal distribution of income, but attaches enormous importance to the equality of opportunity to earn that income, so does Democratic Pragmatism (which is in many

respects Economic Rationalism's ideological cousin)³¹ find it just and proper that some people know more on the subject than others and should be listened to. But under Democratic Pragmatism, anybody has the chance to address others and convince them that he or she is one of those people. Anybody who wishes to can learn the facts of the matter, publish a book, address a public meeting, or start a blog. Anybody can learn sufficient skill at winning friends and influencing people to turn a humble start such as a public meeting into a permanent place among decision-makers.

In that sense all the citizens of a Democratic Pragmatist society, though they are unequal in knowledge, economic status, and many other criteria, are equal in the chance to make their voice heard, and recognized for such merits as that voice, and that voice's proposals, might in fact possess. The quintessential metaphor for that is Abraham Lincoln's journey from a log cabin where he learned law by candlelight to the White House where he protected that law from a violent insurrection that sought to subvert it through force.

The other two relationships recognized by the discourse are competition and cooperation. These are not treated separately, as they are by so many other discourses, but as part of a single process. By competing with each other, proponents of different propositions seek to build a network of allies to give their pet agendas prominence, and to do that they must cooperate with others in promoting their agenda. It is no accident that a parliamentary system, such as that governing the UK, with its multitude of political parties, can get things done and impasses resolved faster than a federal system with two major parties such as the United States. The smaller parties, none of which might command a majority by itself, are more used to trading favors and supporting the other party's pet project today in exchange for an implicit promise of support on their own pet project tomorrow. Note that from a Democratic Pragmatist point of view this is not necessarily a good thing: if the society does not have an active and participatory form of direct democracy, this horse-trading on the parliamentary level allows the people's

³¹ Deriving as it does from a criticism of "scientific sociology" by Popper that is quite parallel to the criticism of planning bureaucracies by Hayek

alleged representatives to collude more efficiently in order to implement some new assault on the citizens' control of their own lives.

To a Democratic Pragmatist, any human interaction in a complex society contains elements of both competition and cooperation.³² To illustrate with a very common example, environmentalists might conflict with developers over a stretch of forest that provides a habitat for some rare community of species.

Both groups seek allies wherever they can get them -- the scientific community, the major voting blocks, the electoral machinery of the political parties, etc. This makes it necessary for both groups to accept obligations to support their new allies in other matters: an environmentalist might agree to curb protests against, say genetically altered food crops, in exchange for a scientific panel calling the world's attention to the irreplaceable biodiversity of some forest threatened with being developed into suburban real estate. At the same time, the developer might find an ally in some candidate for high office, who has a plan for a "voluntary curb" on vehicle emissions. In exchange for backing the real estate interests on this particular development project, the candidate wants the developers' financial backers to lend her plan sufficient muscle to quell resistance in the business community. In this manner, the more any two groups oppose each other, the more other groups they find themselves cooperating with. Alternatively, the two groups might make a deal with each other: in exchange for being allowed to develop this particular stretch of forest, the developers might agree to contribute money to a fund that stops suburban sprawl through preemptive buying up of real estate elsewhere.

In short, raw, naked opposition, maintain Democratic Pragmatists, can occur only when one of the sides has the threat of force working for it, and feels they can afford to grab what they want while giving nothing in return – such a case when one side has a bureaucracy behind it. A bureaucratic hierarchy holds the power of regulation and sanction for which it is only responsible before its own higher echelons, and can reward its cronies as it desires without the need to account for its actions before a community of

³² Dryzek (1997) page 96

concerned and actively participating voters. Any group it supports does not need to make deals, and so isn't open to them; nor does it need to seek any other allies except the bureaucracy. Naturally the group that feels that its interests are being hurt tries to oppose the bureaucracy-backed encroachment on these interests by any means necessary, usually through lawsuits and lobbying.

Such situations have been commonplace in the history of environmentalist movements, particularly in the United States, but the Democratic Pragmatists argue that they are actually an aberration. If they citizens had been bolder in demanding accountability from the bureaucrats and the courts, and if the role of direct democracy had been larger, claim the discourse's adherents, the confrontation between interested groups would have been resolved through the constant search for allies among other participants, which would eventually enmesh both groups in a cooperative structure of mutual obligations approved by the majority of informed citizens. At that point, both would have had to find a way to reach their goals through constructive uses of compromise.

In the end, the environment and the company bottom line would both be better off, if perhaps not in precisely those ways the two groups originally envisioned. Instead of confrontation, claim the Democratic Pragmatists, participatory democracy produces a hard-earned consensus. Competition might be constantly going on with regard to some particular issue, but across the whole spectrum of issues, the reality of policy would be moving closer and closer to what all the debating citizens can agree it should be – with the evolution of consensus driven by the very opposing passions that originally fueled the debates and the search for allies.

Unlike many other discourses, Democratic Pragmatism sets essentially no limit on the number of agents. “Agency is for everybody.”³³ This does not only mean individuals, but extends to collective actors such as religious groups, banks, corporations, venture capitalists, ecological clubs and movements, universities, scientific institutes, communities of music and literary fandom, labor unions, hobby communities such as

³³ Dryzek (1997) page 96

backpackers, hunters, or birdwatchers, and even government agencies. Their motives can be, and usually are, largely composed of self-interest and private agendas, but many of the authors Dryzek draws on³⁴ -- authors such as Kelman (1987), Gundersen (1995), Sagoff (1988), and Williams and Matheny (1995) -- claim that simply by deciding to participate in the open society of debate and democratic engagement, the agents add an additional motivation to their actions, oriented to improving, enlightening, and enriching the community they inhabit.

The decision to participate in an open society does not itself make such people or groups of people into explicit saints or altruists; but whether they acknowledge it or not, by seeking public support for their agenda in an open forum, they recast their arguments in terms of this agenda, if accepted, being a benefit to their fellow human beings as well as themselves. This cannot be entirely fraudulent: in a marketplace of competing ideas, the public won't support an agenda that promises but does not deliver, not when opposing agendas do their best to convince it that the promises are coming from cheats and frauds. Any agent that tries to make his or her goals seem a benefit to the public in order to advance them, will have to truly be a benefit to at least enough of the public to have strong support in policy debates; and in a climate of transparency, competition and keen scrutiny from scandal-mongers, this support base will have to expand as fast as it can simply to keep pace with the agendas of competing agents.³⁵

Arguments framed so as to appeal to public interest will have to become their own reality if they are to survive scrutiny at all. As the new participants enter the debate and internalize these arguments in their own personal discourses, those of them who find the arguments convincing will seek to implement the agenda the arguments support in the name of the public good as much as in the name of any advantage this implementation will provide to them personally.³⁶ According to some theorists, just the inclusion of

³⁴ Dryzek (1997) pp 96-97

³⁵ In other words, Popper's Open Society implies a marketplace of ideas, with participants actively shopping for agendas whose arguments deliver best.

³⁶ Steven Kelman (1987) *Making Public Policy: A Hopeful View of American Government* Basic Books, New York, NY.

discussions among different viewpoint holders in the process of decision-making changes each participant psychologically, making this participant think about long term outcomes, and about benefits to the entire community; according to Gundersen (1995), such changes occur even independently of the participant's need to win support for an agenda.³⁷

Thus, in an open and transparent society with multiple forums of public debate and direct participatory democracy pervading every level of organization, even a totally selfish agent will have an implicit motive of benefiting the other participants, if only to make sure they benefit the agent.

It is this implicit added motive of public beneficence, argue Dryzek's sources, that makes consensus building possible, allowing the different agendas to cross-fertilize in the public consciousness into a pluralistic, inclusive agenda of a community, which the people work together at implementing at which reconciles points of view that started out opposing each other without forcing those points of view to lose their individual concerns and convictions.

The metaphors of Democratic Pragmatism are a great deal more rich, diverse, and emotionally resonant than the Administrative Rationalist's paeans to restraint, prudence, and trust in the administrative elite. It is always more enjoyable for people to come together in the creation of a constantly evolving, pluralistic and endlessly re-inventable compact between free individuals than to adhere rigidly to rules imposed on them by a mechanism of social clockwork. Several important metaphors stand out, although, typically of the pluralism that characterizes this discourse, they do not always agree precisely with each other.

The metaphor is of policy as a resultant – something akin to what Tolstoy meant when he referred to history as the “quotient of millions of individual wills.” Unlike Tolstoy, who sought to use this metaphor in his self-appointed task of showing the immutability of determined historical processes and the helplessness of an individual hubristic enough to try changing them, Democratic Pragmatists imbue this metaphor with

³⁷ Adolf Gundersen (1995) *The Environmental Promise of Democratic Deliberations*, University of Wisconsin Press, Madison, WI

an optimistic outlook. After all, if public policy, public opinion, and public action are each a resultant of many individual decisions and agendas, with society staying on its present course because every participant in it is pushing hard in his or her own direction, well, this implies that anybody can change the course of society, or at least make a major contribution to this change, simply by challenging the status quo in public debate and convincing a lot of agents to pull or push in concert. At the same time, the political scientists who use this metaphor place a lot more emphasis on competition between agents than on consensus building, maintaining that a policy that evolves as a sort of mathematical average of the very different forces attempting to change it will always leave some of these forces gravely disappointed.³⁸

Another metaphor is that of social policy as experimental science. This metaphor has a distinguished history, going back at least to the *Federalist Papers* of Hamilton, Madison and John Jay. As Dryzek points out in his book, most of this metaphor's modern users refer for support to the writings of Karl Popper. From this document's section on Democratic Pragmatism's intellectual pedigree, we can see that Karl Popper himself has been skeptical of this metaphor: some of the ideologies he dealt with, such as Marxism, were impervious to experimental refutation, at least from their own premises. If things worked out the way a Marxist had predicted, it meant the forces of historical inevitability were working on schedule; if events did not follow the script, this meant the forces of reaction were making a final desperate backlash, or the participants were suffering from the last twitches of false consciousness, or the dialectic predicted the triumph of repression as a necessary condition of building up enough contradictions for the crisis to arrive.

And yet, while the notion that the validity of a would-be policy-maker's claims could be proven or disproven by the actual results of the policy is not, strictly speaking, truly Popperian, it is true that Popper would have approved of a society which allowed the public to have a taste of proposed reforms on a smaller scale before it approved them for society-wide implementation. It is also true that while Popper was skeptical about the

³⁸ Dryzek (1997) page 97

possibility of experimentally disproving ideologies, he would be the first to argue that the Open Society he advocated would permit the public to hold specific policies advocated by the proponents of each ideology to falsifiable predictions. Finally, said Popper we know how to tell whether or not a statement is scientific – now it is time to apply this discovery to statements of policy.

While the claims of a policy-maker whose policy failed to deliver on its campaign promises could not be disproven in their own context, the public would not care. The experiment would have been intended to measure the validity of the policy, not the internal consistency of any theory. If the theory could be used to generate a policy that delivered on its promises better, it was up to the True Believer to do so;³⁹ in the meantime the public would stick with policies that did not fail to satisfy.

Bolstering this metaphor is Dryzek’s observation that modern advocates of the Open Society believe that the proper attitude of a policy-maker is essentially that of the scientist:⁴⁰ open to new ideas, willing to criticize claims using real-world data, but not beholden to any theory *a priori*. Whatever theory this policy-maker develops based on the data of past experience, the promises he or she makes to the public in getting it accepted constitute a set of criteria that can be used in the falsification of the policy, though not the theory. Thus the grounding of the “policy as experimental science” metaphor in Karl Popper is vindicated: though the proponents of a theory may explain the failure of a policy within the theory’s own discourse, the public’s criterion of a policy made falsifiable by its promises puts all the theories that influence policymakers on an even and impartial footing in the laboratory of public perception. They must generate policies that the public accepts as being possible to disprove by observation of how their results tally with their promises: these are called “concrete proposals” and without them no agenda can gain public acceptance. And once these falsifiable proposals are implemented, they are indeed treated as any hypothesis must be treated in a chemical or

³⁹ And of course the True Believer is free to blame anyone for those failures, from Jews, to kulaks, to Big Tobacco – but in an Open Society, the scapegoats have their own voice, and the tactic of scapegoating does not work for long.

⁴⁰ Dryzek (1997), *ibid*

physical laboratory.⁴¹

A typical metaphor used by the fraction of Democratic Pragmatist discourse that emphasizes the Pragmatist half of the name is that of the thermostat. This metaphor states that as the course of a society swings in favor of certain agents, whether these agents represent ideologies, private interests, political fractions, or any other motivating factors, the outrage of the agents being deprived far exceeds the enthusiasm of the agents being rewarded. Such is the nature of the human psyche: those who are robbed fight harder to regain what they lost, while those who gain grow content and less motivated to exert themselves.⁴²

From this observation, the users of the thermostat metaphor go on to say that when a pluralistic, transparent, and open society starts moving in a course that hurts some groups; their voices in public debate will be stronger than the voices of those groups who benefit. The public's response to these voices is likely to be a swing of popular support back to the original course of society. Of course if the "temperature" swings too much the other way, the resulting backlash from whichever groups are the losers this time will steer society back again, towards an optimal course where the largest possible number of people are happy and fulfilled with the existing arrangements.

Naturally precisely what these arrangements are differs from culture to culture: the Swedes seem satisfied with greater state intrusion into the private sector of the economy than the United States citizens are ever likely to tolerate, the Swiss would be outraged by the degree of federal control the United States government has over individual states, as opposed to a much looser arrangements between the Swiss Federation and its constituent cantons. They would also be furious if someone asked them to give up their power of resolving vital matters by direct referendum, while in the United States the very nature of the Constitution that forms the foundation of US federal

⁴¹ Yes, it is impossible to control all the conditions in a society, as opposed to a laboratory. Nevertheless, when the results of such an experiment are reproducible under many different conditions that in itself is valid evidence that coincidence is highly improbable. Such evidence constitutes very important debating ammunition in the arsenal of Economic Rationalism.

⁴² In other words, nothing fails like success.

democracy makes certain that direct popular vote does not carry any significant weight on the national level. In short, while the thermostat metaphor predicts that a government in a pluralistic, transparent, and open society is most likely to stabilize at a policy that satisfies the largest possible number of agents, it cannot predict where that equilibrium point might be outside the reference points of a particular culture.

Another major rhetorical device used by the Democratic Pragmatist discourse is the metaphor-based concept of “atomization.” The metaphor is implicit in the word itself, where a cohesive whole is shattered into individual “atoms,” small and insignificant. These unattached, unconnected “atoms” are now easily manipulated by forces too immense for an atom to resist, such as a bureaucracy. Citing the example of Greek poleis, where all activity revolved around the community, producing the most individualistic culture of the ancient world, while the separation of people from their connection of *gens* and *tribus* produced the faceless mobs of late Republican Rome, fit only to provide dictators with sword fodder and riot in the street if their bread dole came in late, Democratic Pragmatists assert that the only way for an individual to be truly free is through participation in community life, hopefully through the direct democratic process.

Methods of Empowerment

From the above it is obvious that to empower citizens and make Democratic Pragmatism a workable proposition, a society must satisfy the conditions of transparency, which means the actions of all decision-makers must be open to scrutiny from any interested agent, pluralism, which means that multiple points of view must be able to debate any issue in multiple uncensored forums of discussion, and openness, which means that the rulers (i.e. the policymakers) lack the power to prevent the ruled from replacing them when a majority of agents should desire to do so.

Real-world experience teaches us that all three of these qualities rapidly become restricted and circumscribed unless the citizens care enough to use them, actively and habitually. In order to maintain the civic spirit of the public and keep the citizens from lapsing into political apathy, citizens must acquire the ever-present conviction that what they do matters, and that any agent, from a voting block down to a single individual, has

the power to change the current policy into something more fulfilling and satisfactory. And to empower a single individual in a society of millions, it is necessary that as much power as expedient be devolved to the local community, so as to give individual citizens a schooling of active, direct participation in capital-D Democracy. With the community to magnify the efforts of a concerned and determined participant, an individual who can achieve changes on the local scene can make the state and the Federal level of policy-crafting sit up and pay attention.

Thus, the first task of a Democratic Pragmatist is to empower direct democracy, and that, in turn, can only be done by liberating the decision-making process from the shackles of bureaucracy, hierarchy, and legalism, while at the same time developing a culture of active participation and a positive view of policy debates.⁴³ To do that, Democratic Pragmatism has developed its own repertoire, which is analogous to the repertoire of analysis and control developed by Administrative Rationalists.

Since under the most democratic of constitutions, the actual implementation of the people's choice must be carried out by a bureaucracy of experts, analysts, and managers, it is of the highest priority to a Democratic Pragmatist to democratize the bureaucratic structures themselves.⁴⁴ For this purpose, the repertoire of Democratic Pragmatism includes the items of public consultation and policy dialogue.⁴⁵

For effective public consultation, the constrained structure of any bureaucratic hierarchy must be balanced with a public forum, existing in multiple incarnations across many different media. The individual forums can be electronic, printed, transmitted by television or radio, or conducted face-to-face, such as a question-and answer session in a

⁴³ Which is not at all the same as the rule of law: legalism implies long and pointless litigation where the outcome of an issue depends on years of tortuous legal wrangling that is ultimately solved not by who is right, but by such considerations as which side runs out of lawyer fees first, and who has the power to appoint judges. Under rule of law, the laws serve human beings, under legalism they mainly serve the trial lawyers. Since legalistic morasses make the law useless as a method of resolving disputes, legalism can even be considered the opposite of the rule of law, and certainly must be considered a detriment to it.

⁴⁴ Dryzek (1997) page 82

⁴⁵ Dryzek (1997) pp 86-88

town meeting. Such a forum can answer two needs. Firstly, it can inform the public of the hierarchy's deliberations, inducing transparency. Just as importantly, it can serve to allow lower members of the hierarchy, as well as concerned stakeholders (a category which, under Democratic Pragmatism, includes ordinary citizens) completely outside it, to bring issues directly to the attention of the hierarchy's senior administrators, bypassing the selective editing that invariably accompanies the processing of data by middle management. This last effect is a necessary condition for pluralism, creating access to the decision-maker for voices that would otherwise be stranded out in the echoing voids.

The presence of such a multiple-headed debating forum also solves a perennial problem of even the best-managed Weberian bureaucracies: it allows for easier coordination between offices of, say, Air Purity and Water Purity in dealing with the problem of pollution in concert from several directions. Not only would it be easier for the administrators to devise an interdepartmental plan of attack on an environmental problem, it would also allow agents outside the bureaucracy to infuse freshly relevant information, which would frequently be of the sort that requires two or more offices to coordinate if it is to be used effectively. A requirement for the hierarchy to make use of this information would not only make coordination easier to start with, but would drive the offices involved to constantly seek out ways to improve coordination in the future, sowing seeds for a process rather than a onetime reform. As the different offices coordinate in order to use information best, they will change their organizational behavior, which will make it easier for them to coordinate their use of information in the future – and earn them praise and rewards from above. As this will now be easier, the offices will cooperate more often to earn even greater kudos from the top of the hierarchy, starting a virtuous cycle of evolution and transformation.

In short, a public consultation forum would encourage a new culture of public input outside the bureaucracy and a new culture of keeping up with the activities of neighbor offices inside it.

The practices of public consultation and policy dialogue differ in that during public consultation, the process of debate and the sharing of information with the hierarchy are formalized, and policy-makers are obligated to put their proposal up for comments and debate from the public and then to respond to those comments within a

certain length of time. This sequence of steps is made a necessary condition to the ultimate approval of whatever project the policy-makers are advocating. This is a benefit in the sense that it at least allows democratic processes to get a foot in the door, but since each round of public consultation is oriented towards a specific project, the practice is of limited use in creating a continuous habit of cooperation between a bureaucracy and the contributing public.

Since the hierarchy won't be accepting input from the public as a matter of course, in many cases the hierarchy's intra-organizational culture would persist in regarding such rounds of consultation as unwelcome intrusions, which must be endured like all other practices mandated by law, but certainly not welcomed. In such cases, the hierarchy may well attempt to brush the public off with a prepared statement that acknowledges the public's contribution and uses the rest of the response to justify what the agency was going to do anyway.⁴⁶ At the same time, a public without a continuous habit of cooperating with the experts and contributing to their decisions is unlikely to know how best to influence the hierarchy, and likely won't see it as worth their while. The input from citizens who are concerned enough to contribute would be limited to a relatively small subset of the public rather than a large cross-section.

On the other hand, public consultation can evolve into a public policy dialogue. This is the next step beyond consultation, when the public forums constantly keep up with the deliberations of administrative hierarchies, and provide input not only on specific projects, but all the time, at every stage of every project's planning and implementation. The participation of various agents in the discussion eventually evolves into a strategy for dealing with a larger issue, environmental or otherwise, that gathers public support and influences the opinion climate in which different projects are approved. Such a wide spectrum of discussion cannot be stonewalled by an official response to some stated concerns, as so often happens during a public consultation -- even if the bureaucrats are not required to listen to the public all the time, the discussion would form the public opinion that gives the hierarchy its mandate, and the information

⁴⁶ Dryzek (1997) page 87

and ideas they provide would be a necessary part in the formation of any proposal that the hierarchy's experts would assemble, provided they want it approved. In this manner, participants in a policy dialogue provide indispensable input to any individual project before the bureaucrats even considered submitting the proposal for a public consultation!

And of course proposals would now be going both ways. Policy dialogue would involve groups interested in the outcome in discussions, education, and negotiations outside the context of the hierarchy, which would allow them to discuss their way to a solution that all sides find equitable without the threat of coercion. Because many of these solutions would frequently make it possible for policy to handle issues that were previously considered politically untouchable, these solutions would often reach the ears of policymakers at the hierarchy's apex, and once approved "from the bottom up," they would then be submitted down to the hierarchy for implementation. Any expert or analyst working for the hierarchy would be aware that the other interested parties are looking over his or her shoulder, and that he or she is free to submit proposals to the consultations of other interested groups for approval – in essence no longer giving the hierarchy organization a monopoly on expertise. This alone would diversify the range of opinions an expert can state: after all, now there is no upper management to put a nix on opinions that do not fit well with accepted wisdom.

In the beginning, such changes are likely to encounter institutional resistance from bureaucratic organizations, but such resistance will likely be replaced with grudging, and then with enthusiastic acceptance as the bureaucrats realize that the dialogue enables them to craft better policy which encounters less resistance because the citizens have had a hand in its formulation. Moreover, the experts would be realizing that thanks to the negotiation taking part in the forums, many of the problems they were forced to wrestle with have now developed a habit of resolving themselves, and that with a constant and not just a project-by-project transparency, they can now better transmit needed information, both along the vertical and the horizontal axes. Of course the course of this transition can be greatly aided by the hierarchy's bosses.

Cooperation between a hierarchy and the public can be encouraged through many channels of incentive. The chief administrators could reward those hierarchies, or subsets of a larger hierarchy, that are most successful at addressing the concerns expressed by the

public, and use the suggestions introduced on such public forums most creatively. These rewards could range from salary bonuses to be distributed among individual bureaucrats to increased budgets given to offices within an agency most effective at resolving issues through policy dialogues with interested parties, to increased importance assigned to these organizations, or their members, in the larger hierarchy of decision-making.

For example, a state EPA that has been particularly successful in making use of public input and satisfying various complaints can be rewarded by asking it for input on re-organizing the Federal EPA to answer these needs. A city liaison office of the EPA that effectively coordinated with industries, citizen groups, the local business community, and the City Hall in order to curb emissions of toxins into soil, water and air in this particular city should be given a chance to network with other city liaisons in the EPA and spread its techniques of coordination to urban areas that has hitherto had to suffer under the more usual practice of confrontation and mismanagement. Such rewards should both ensure that sub-hierarchies that accept the most public input and use it the wisest should have a disproportionate influence in forming the hierarchy's institutional culture, and that other officials and administrators, in their search for more influence, higher budgets, and faster promotion, make their institutions open up to input from outside themselves, and seek out a chance to invite outside sources of knowledge, or even non-expert but concerned citizens, to examine the hierarchy's work and contribute opinions and ideas.

The cultivation of such acceptance, and in some cases enthusiasm, for pluralism and transparency, should in its turn make certain that discussion forums would remain a continuous process through the hierarchy's day-to-day operations, and not a onetime event focusing on a specific public consultation. Thus such practices would promote both greater acceptance of policy dialogue and the evolution of more public consultation projects into new policy dialogues, which would then range over many topics to produce workable strategies acceptable to every party in the debate.

Obviously the public forums would not be worth much if the facts about policy deliberation were withheld from anyone but the hierarchical elite. Because of this, transparency must be ensured through public measures such as right-to-know legislation, which constitutes the third item on the Democratic Pragmatist repertoire. This must not

be limited to the mere laws that mandate disclosure of information – explicit guarantees that the public will actually be able to interpret and share the disclosed information must also be established, although such matters are much harder to legislate.

Whether the forums of public debate exist in print, in cyberspace, on TV, on talk radio, or in the form of direct assemblies of concerned citizens, the structure of social organization must guarantee them access not just to the policy-makers' deliberations, but also to experts, independent of policy-makers, that are able to provide the context in which these deliberations occur, and instruct the citizens in making sense of the information revealed therein. While these are usually easy to come by in a sophisticated modern society, there are exceptions, such a hypothetical case when the citizens involved belong to some group that suffers from previously established disadvantages in income, in education, in the number of contacts with potential allies outside itself, or in familiarity with the topic.⁴⁷ Another requirement is the ready ability of the participants in one forum to communicate their information, decisions and concerns to other forums where the issue is being discussed, so as to empower the participant in any given forum to be heard anywhere anyone takes an interest in the issue, potentially across the globe.

The fourth item on the Democratic Pragmatist repertoire seeks to encourage wider use of alternative dispute resolution between interested parties (such as industry, environmental activists, and regulators.) The task is to avoid a lengthy and convoluted process of litigation, which can take decades to resolve an issue and in the end results increased paranoia on the part of both winners and losers. An alternative resolution, on the other hand, can result in a learning process for sides involved, leading to the avoidance of at least some clashes looming on the horizon, and possibly even to a constructive dialogue.⁴⁸

The stakeholders involved must agree to come together, and to debate the issue before impartially chosen mediators. If possible, this process must be made as

⁴⁷ Dryzek (1997) page 90

⁴⁸ Kai N. Lee (1993) *Compass and Gyroscope: Integrating Science and Politics For the Environment* Island Press, Washington, DC.

transparent as possible, with the public being able to offer input on the situation and the stakeholders able to appeal their case directly to the public. The public, even more than the mediators themselves, is to act as a guarantor of fair dealing: since it is heterogeneous, and both points of view are likely to have many supporters among the people, unfairness to either party will cause an explosion of focused outrage by its proponents (think of the multitude of blogs actively working to spot the fibs of either side during the recent elections.) The blogosphere is a great advance in making Democratic Pragmatism's adherents more confident of themselves, and spurring them to practice what they would preach.

Alternative dispute resolution (also known by the acronym ADR) has one additional advantage: even if any particular negotiation falls through, the participants walk away with a much better awareness of what pushes the other side's buttons. Because of this, they each have a better chance of planning their next project, whatever it is, around the other's sensitive spots. For example if an oil company seeks to build a new refinery, and the inhabitants of a local small town protest, no matter how many times the oil company assures the residents that its air quality precautions are adequate, the likely response would be a certainty that the oil people are somehow trying to trick the residents. The result is that in the last three decades, the construction of new oil refineries within United States has run into a brick wall.

On the other hand, if the oil company invites the town council to dictate terms to the company, and spell out exactly which precautions they want the company to take against odor, emissions, and the complex's unaesthetic appearance, the town council, now feeling in control, can be very reasonable in its demands. Of course that won't help the company much, since there would still remain the state and Federal EPA to convince, plus the various groups of environmental activists. Bringing all of these interests together is a much more challenging proposition, but not impossible – Dryzek cites a Canadian case where ADR was able to produce mutual agreements between all interested parties on the siting of a toxic waste dump.⁴⁹ Experts in air quality and pollution control

⁴⁹ Dryzek (1997) page 89

engineering can serve as an impartial sounding board for specific proposals, holding up the evidence presented by every side against the standard of their knowledge. The public can follow the debates over the Internet, printed page and talk radio, and concerned groups can write letters to the editor, stir up public opinion for one side or the other, or even address the deliberations and demand guarantees of their own from the oil company.

And if the dialogue succeeds, the environmentalists would have a new environmentally friendly oil refinery design to use in comparisons with old oil refineries, enabling them to insist on higher standards for refinery emissions, while the oil company would have a refinery and, after all these years, a way to win public support for it. The town, of course, would have whatever inducements the oil company will throw in to sweeten the deal – and the state EPA might have the company’s support as a sponsor on some state program to restore an endangered species’ habitat.

Some critics say that ADR is essentially a way for agents with greater economic or administrative power to co-opt the potential opposition, clearing the way for their agenda, not because it truly addresses the concerns of their opponents but because these opponents are presented with a consolation prize and then threatened with being branded as fanatics if they reject it.⁵⁰ This criticism could be valid or not, depending on the particulars of each case, but a Democratic Pragmatist would say that a power administrative agency or a wealthy corporation could only get away with such an approach if the public was not concerned enough to research the issue and attract the expert mediators that would not allow Goliath to sell any promise on which he could not deliver. A coalition of active citizens speaking before the eyes of the nation, argue Democratic Pragmatists, would be the best possible way to prevent special interests with economic or administrative power from acting like the proverbial 800-pound gorilla.

Dryzek also names a fifth item on the Democratic Pragmatist repertoire, namely the public inquiry panel.⁵¹ This is basically an impact assessment that summons

⁵⁰ Douglas J. Amy (1987) *The Politics of Environmental Mediation*, Columbia University Press, New York, NY

⁵¹ Dryzek (1997) page 90

witnesses. While it does feature a “specific and visible forum in which proponents and objectors alike can make depositions and arguments,” the forum is shown to be defined by the constraints of the administrative agent that established it. As such, the only evidence that is admitted for deposition before the “impartial” panel is the sort that the forum’s administrator is comfortable with. For example, a public inquiry panel in Britain, examining the proposed construction of a Thermal Oxide Reprocessing Plant (THORP) in 1977, admitted evidence from the project proponent on the supposed economic benefit of the plant, but economic counter-evidence from objectors was not allowed⁵².

Dryzek contrasts this type of discussion with the independent forum that arises during a policy dialogue, and comments that the more successful a public inquiry panel is, the more it looks like a public policy dialogue. In other words, with the evidence admissible to the forum prescribed by the administration and the process of establishing the forum itself being open only to the administrators who decide to set up an inquiry panel, this item fails the criterion of pluralism, and quite possibly the criterion of transparency, since the public is typically not invited to observe the process whereby it is decided on what criteria evidence is or isn’t admitted to be presented before the inquiry panel.

Democratic Pragmatism in Practice

The first great triumph of the Democratic Pragmatist discourse with respect to environmental issues is the birth of the environment itself – at least as a widespread public concern. The mass movement that eventually evolved into modern environmentalism first exploded in the early 1960’s as Rachel Carson’s book *Silent Spring* won itself a wide and enthusiastic readership, who saw Carson’s portrayal of a dying ecology not merely as a caution, but as a call to immediate political action. The ideas that gave birth to modern environmentalist awareness were present for at least a

⁵² Dryzek (1997), *ibid.*

century before the 1960's,⁵³ and it certainly aided the spread of environmentalist ideas that President John Fitzgerald Kennedy and his Secretary of the Interior Stewart L. Udall⁵⁴ took a keen interest in the problems of conservation and pollution at just about the time *Silent Spring* shocked the US middle class out of its consumerist innocence. But it took thousands of public agitators, speaking before millions of suburbanites⁵⁵ and small-town folks about the dangers of pollution in the particular creek running outside their particular backyards, which propelled the outpouring of public concern and involvement made visible on the first Earth Day on April 22, 1970.

According to Senator Nelson, who was the first Earth Day's widely-recognized "midwife," the first Earth Day worked not so much due to anything government organizers did as because of spontaneous action taken by the 20 million demonstrators and the thousands of schools and local communities that took part in the event across the nation. The participants themselves took action to discuss local and national topics, to educate their respective communities, and to debate possible solutions, acting in a venue provided by the government, but not delegating the responsibility of action to any official representative. In Senator Nelson's own words, the event "organized itself."⁵⁶

The 1960's and early 1970's proved to be grassroots environmentalism's heroic age. In the subsequent decades, as environmentalism came to depend on regulation and lawsuits to obtain its objectives, advocates soon came to complain of diminishing returns and what Dryzek calls an "implementation deficit"⁵⁷ – a term invented by German environmental policy analysts who noticed the same problems in their society. The

⁵³ Robert E. Taylor (1990) *Ahead of the Curve: Shaping New Solutions to Environmental Problems* Potomac

⁵⁴ Stewart L. Udall (1963) *The Quiet Crisis*. Holt, Rinehart and Winston, New York, NY.

⁵⁵ And of course before every other kind of people, but the suburbs were significant because that is where the middle-class, white-collar population, the subsection of the voting public most courted by politicians, made their residence. In addition, the residents of the suburbs lived on the border between the urban and the rural settings, and so could lend their voice to the outrage concerning the pollution problems of both milieus.

⁵⁶ www.wikipedia.org, entry for "Earth Day"

⁵⁷ Dryzek (1997) page 79.

people who previously campaigned for environmental action were often left on the sidelines, and, paradoxically, as their message of environmentalism gained greater and greater acceptance with the voting public, the specific policies the government undertook to translate this message into concrete outcomes became increasingly distrusted and disliked. The grassroots activists of yesterday once more began to seek a course of inclusion, which would motivate the public to debate the issues and advance solutions without waiting for rescue from the establishment. At the same time, new grassroots movements were evolving, which sought to integrate concern for nature with other public concerns, such as employment and protection of communities from unfair regulation. As Robert Taylor put it in his book: “[Many] different Third Wave [of environmentalism] concepts emerged, but the unifying theme was that the new wave should be solution-oriented.”

At the same time as this debate was gathering force in the environmental policy arena of United States, the basic nature of the relationship between the governor and the governed was evolving across the globe. As the ideas of Carl Popper were gaining increasing acceptance, more and more governments came under increasing social pressure to open policymaking up to wider citizen participation. Across the First World, this process has been one the defining traits which characterize the last third of the twentieth century. After the fall of Communism, the evolution of governments towards greater public participation has become a global pattern. All discourses relating to the environment, but of course Democratic Pragmatism more than the others, must evolve in a context defined by greater ability of individuals and small communities to influence the course taken by large polities. Within the last two decades, the drift towards greater state control of local community issues has appeared to be reversing as well, with many governments adopting policies of devolution, in which regions and municipalities are saddled with less regulation and more responsibility.

The pioneer in this regard was Switzerland, which has had the most direct democratic system and the most open society of all nations on Earth ever since, in the year 1890, its constitution was amended to provide for greater popular participation in

government. In the past 200 years, there have been 800 nationwide referendums across the globe. Of these, 400 were in Switzerland.⁵⁸ Throughout the 20th century, Swiss policymakers have increasingly come to rely on “double majorities” – that is, a majority of voters in a direct nation-wide referendum and a majority of majorities in referendums held within each federal canton -- to legitimize all major shifts in policy. Any group of Swiss citizens, no matter how insignificant, which feels itself aggrieved by any political decision, can essentially force the country to hold a referendum on the topic if they make sufficient noise. Only 100000 signatures on a petition are needed out of a population of 4.7 million citizens. In addition to being able to change existing laws, these same 100000 signatures can force a referendum on an entirely new statute drafted through citizen initiative – if successful, the proposition becomes law, and if not, the interested group can at least constantly maintain the topic in the public eye, generating debate and informing the citizenry through argument.⁵⁹

The system has evolved over the century since its adoption, demonstrating both remarkable powers of generating consensus and, more recently, a remarkable capability for peaceful change.⁶⁰ Its effects have made a dedication to direct participation in decision making, on every level from Federal to municipal, one of the defining elements of what it means to be Swiss. Besides the power the system delegates to cantons, the example of successful popular power at the Federal level inspires the citizens of every individual canton with a fierce insistence on their rights as individuals, and on the rights

⁵⁸ www.cusdi.org

⁵⁹ An interesting side effect has been the abolition of the executive branch’s veto power. After all, why depend on the veto of an official, albeit an elected one, when the citizens themselves have the power of veto through referendum?

⁶⁰ This has not always been a good thing: women were denied the right to vote until 1971, and right now third-generation descendants of “guest workers” from other nations, born and raised in Switzerland, still struggle to gain citizenship rights. Up to 20% of Switzerland population is considered “foreigner”, and recently, a referendum held on a proposition to make it easier for people actually born in Switzerland to become Swiss citizens has been overwhelmingly defeated. A very successful poster used by the opposition to this measure has featured a forest of black and brown hands reaching for a Swiss citizenship certificate.

of their communities before the canton's own government. For example, in 1978, the Swiss city of Jura and its surrounding territory had successfully seceded from the canton of Bern and become a canton in its own right, seeking the permission to secede in a nationwide referendum and gaining the legitimacy of a double majority.

Within each canton, the inhabitants enjoy a reach and varied political life, with many local parties debating local issues and contesting the right to represent intra-cantonal districts and municipalities in the canton's own legislature. In effect, the canton itself becomes a confederation of the communities that comprise it, with the effect that the natural size of a canton appears to be a major city and some surrounding villages.

Switzerland's 7-member Federal Council has been neatly apportioned between the four main parties for most of its existence. The Swiss saw it as a symbol of stability: rather than a contentious wrangle over seats, analogous to the maneuvers of political parties over ministerial portfolios that have bedeviled other nations, the Swiss Federal council had traditionally been filled according to a consensus established before a single vote was cast, with each major voting block assured a voice. Since the power of the Swiss Federal government is limited as it was, the other voting blocks remained secure in the knowledge that if any the four main parties ever stepped out of line, they had the option of recall referendum and voter initiative to hold over the Federal government's head.

This system of consensus-based apportioning did not depend on voting as much as the Swiss constitution said it did, but that was only because in a stable, wealthy and conservative society such as Switzerland, the likely behavior of voting groups could be predicted in advance, and the voting would usually bear the prediction out. Or at least it would once. As Switzerland becomes less homogenous socially, the election scene has grown increasingly more dynamic. After the election of 2003 the composition of the Federal Council had to be changed in accordance with the new election results, a shock to the Swiss as they suddenly discovered that consensus-building cannot completely replace actual appeals to the voter.

In short, the Swiss system of government has not, as some critics of Democratic Pragmatism allege, brought about wildly inconsistent policies passed by the ignorant at the urging of the ignominious. On the contrary, direct participation seems to have

inspired all involved parties with a great deal of responsibility, making it possible for interested stakeholders to broker multiple agreements and arrive at a satisfactory policy through reasonable discussion, so that society could operate without being swamped in a torrent of referenda. If the system could be accused of anything, it is conservatism, which was brought about by the understandable realization that if a law was to stand any chance of gaining the legitimizing double majority, it should be hammered out in every detail before being proposed, with special care taken not to leave out any party with a legitimate interest. The converse, of course, is that it could run no chance of offending any group, which meant that controversial subjects like allowing women to vote were repeatedly put off for the next Federal Assembly to deal with.⁶¹ As Swiss society grew more globalized and diverse, the process of policy debate gained new intensity, as consensus building could no longer resolve all challenges before the votes were cast.

As far as dealing with environmental issues went, the Swiss model of Democratic Pragmatism has had a mixed success. A Federal-level Green Party entered the political scene in 1979 (when the first Green member of the National Assembly was elected), but has enjoyed limited success since, electing town mayors and members of canton governments. The maximum membership in the National Assembly they had achieved was 14, in the Assembly established by the election of 2003. Although, given the multiple factions of Swiss politics, this makes it the fifth largest party in the 200-member Federal Assembly (the largest has 55 seats), the party has hitherto failed to gain a member in the Federal Council.

Nevertheless, Switzerland has achieved an exemplary record on atmospheric emissions, showing the highest carbon efficiency of all developed nations.⁶² This has

⁶¹ Kris W. Kobach (1993) *The Referendum: Direct Democracy in Switzerland*, Dartmouth Publishing Company, Hanover, NH.

⁶² www.nationmaster.com. Apropos, Switzerland's high scores on the acid rain scale is hardly the fault of the Swiss: as a mountainous country, Switzerland often traps acid rain that has been flying down from Central Europe to fall on somebody else. We see from the same chart that both Germany and Austria get more acid rain than Switzerland, and Switzerland cannot avoid some of this acid rain due to sheer proximity.

largely been achieved through a commitment to nuclear power combined with a transition from manufacturing to service economy and high air quality standards. In order to ensure high environmental standards, the Swiss government has been given new federal powers: a sign of departure for the Swiss who have historically preferred to trust cantonal government and private enterprise on most issues. Perhaps the limited success of the Greens at the ballot box is a sign that the larger political parties have been so responsive to the citizens' concerns regarding the state of the environment they do not see the need for a new party to come in and reshuffle their carefully apportioned Federal Council seats.

Another nation exemplified by direct democracy is Norway – in fact, the concept of devolving state powers to the citizens has become popular throughout the Scandinavian nations, but Norway has taken it to the highest extent. The Norwegian policy has been to strip the central authority from Oslo as much as possible, emphasizing the power of the county assembly to direct affairs that it knows best. Even the county assembly has to defer a lot of its power to the nation 434 municipalities, which can work with the county but frequently have an agenda of their own.

3.1.3 The Economic Rationalist

Classification

Like the two discourses discussed before it, Economic Rationalism is a Prosaic, Reformist discourse oriented towards maintaining the current state of affairs – that is, a liberal Western society founded upon an industrial economy – essentially unchanged in its fundamentals. What changes it does seek to make, it seeks one at a time, in response to each particular challenge⁶³, rather fall into the temptation to resolve all challenges posed by the relationship between this society and the natural world in one all-encompassing re-imagining of relationships.

The difference lies in the discourses' source of intellectual legitimacy for

⁶³ An Economic Rationalist would say “As demand for a change arises”.

solutions to be adopted. Administrative Rationalists believe in the power of a panel of experts to arrive at the correct solution, while Democratic Pragmatists proclaim that a working solution can only be reached through transparent public debate and open, participatory consensus-building, overseen by the watchful gaze of actively involved concerned citizens. An Economic Rationalist, on the other hand, looks to questions of affordability in deciding whether or not to pursue a policy, and believes that if either experts or debating citizens choose to ignore the information distributed through the economy by the constantly shifting forces of supply and demand, whatever policy they decide on will simply be impossible to carry through.

The ultimate legitimacy, in the eyes of an Economic Rationalist, comes from an awareness of scarcity: there just aren't enough resources to do everything everyone wants, and in a society of competing subjective interests, it is mathematically impossible for any central authority that is a subset of this society to maintain awareness of sufficient information to decide on how to allocate these scarce resources. Therefore the only way these resources can be allocated to achieve whatever goal the consensus decides upon must lie in the operation of free trading, and an economic system that multiplies resources through the operation of market laws. This way, when the social authority decides to do something, it is actually possible for society to afford it without either breaking under the strain or losing the consensus between different agents' personal perspectives that legitimizes the action in the first place. In that regard, the health of our ecosystem is just another good to be paid for, though, as it turns out, one as vital as food or water.

As we can see, just as the Democratic Pragmatist discourse is a reaction to the inefficiency of Administrative Rationalism in dealing with the chaotic world that cannot be reduced to an assessment report, Economic Rationalism is both its twin and its heir: it seeks to address the problem of dealing with too much information for a panel of experts to handle, and at the same time to make the debating citizens aware of the cold facts on the ground, that are not going to change no matter how many different points of view are expressed regarding them. The hope is that in the light of economic theory, policy debates between different agents will be limited to propositions that can actually work, and that decision makers will learn to use the laws governing market interactions rather

than stand in the way of their operations and spend wasted energy trying to bail out some unsalvageable policy that makes its own stated goals impossible to afford simply by its own continuing influence on supply and demand.

The nature of these laws and their relationship to the laws of nature such as physics and chemistry will be discussed further in the section on Economic Rationalist ontology. For now we shall look at the origin of Economic rationalism and the intellectual justification its adherents have developed. It is instructive to note that steps of this discourse's development bear an uncanny parallel to the steps taken by the developing philosophy that finally became Democratic Pragmatism.

3.1.3.2.1 Hayekian Catallaxy: Twin to Popper's Open Society

The school of thought which articulates the main principles of the Economic Rationalist discourse certainly has its start in the works of Adam Smith⁶⁴ and David Ricardo⁶⁵, who described the operation of the free market and its superiority to state intervention in creating any good or service for which demand existed. All subsequent scientific economics is either founded on the principles elucidated by these scholars, or converges with these principles from a different direction; but neither Smith nor Ricardo articulated the main argument for modern Economic Rationalism – the description of the way free markets allocate resources through the use of information that is simply unavailable to any other form of decision-making. A precise and detailed description of the market as an information-processing system slowly evolved over more than 200 years, developing through the work of the Austrian School of Economics in the late 19th and early 20th century,⁶⁶ and was only fully articulated in the writings of

⁶⁴ Adam Smith (1776) *An Inquiry Into the Nature and Causes of the Wealth of Nations*, available online at www.adamsmith.org

⁶⁵ David Ricardo (1815) *Essay on the Influence of a Low Price of Corn on the Profits of Stock*, (1817) *Principles of Political Economy and Taxation*, available online at <http://phare.univ-paris1.fr/textes/Ricardo/>

⁶⁶ John Moser (1997) “*The Origins of the Austrian School of Economics*”, available online at

Ludwig von Mises,⁶⁷ Friedrich Hayek,⁶⁸ Henry Hazlitt,⁶⁹ and the neo-Hayekian arguments of their modern intellectual heirs, who expressed Hayek's discourse of catallaxy⁷⁰ arising from uncertainty in terms of rigorous mathematical analysis⁷¹.

Hayek's argument seems to have been founded on the same fundamental concerns as Karl Popper's: the impossibility of any central authority, however well-stocked with learned experts, being able to predict economic events accurately. Popper phrased it in terms of falsifiability and the contradictory task of a society attempting to predict its own future state of knowledge, while Hayek focused on the impossibility of a bureaucracy being able to understand economic data outside the irreducible and idiosyncratic context in which the millions of economic agents whose activity comprises this data must make their individual assessments of risk, cost and benefit. A modern neo-Hayekian might use the analogy of the well known mathematical proof that it is impossible to create a lossless data compression algorithm that will compress all possible inputs – such an algorithm would need to map a larger set onto a smaller set on a one-to-one basis⁷². In the same way, compression of data on economic activity to a form in which a panel of experts can

<http://www.gmu.edu/departments/ihs/hsr/s97hsr.html#austrian>

⁶⁷ Ludwig von Mises (1929) *Critique of Interventionism: Inquiries Into Present Day Economic Policy and Ideology*, available online at www.mises.org

⁶⁸ Friedrich August von Hayek (1945) *The Use of Knowledge In Society* (1973) *Law, Legislation, and Liberty: A New Statement of the Liberal Principles of Justice and Political Economy*, University of Chicago Press, Chicago, IL.

⁶⁹ Henry Hazlitt (1946) *Economics In One Lesson*, Harper and Brothers, New York, NY (1959) *The Failure of the New Economics*, Van Nostrand, Princeton, NJ.

⁷⁰ Catallaxy: a word meaning the capacity of a system for self-organization, where no single part of a system contains the information under which the system operates, and yet the information is constantly being updated, improved, and used in arriving at outcomes increasingly closer to optimum. In economic the word refers to the capacity of the free market to correct its own shortcomings. Popularized by von Mises and extensively used by Hayek.

⁷¹ Ariel Rubinstein (1998), *Modeling Bounded Rationality*, MIT Press, Cambridge, Boston, MA.

⁷² www.wikipedia.org entry for "Pseudomathematics".

profitably analyze it by definition excludes the context of each individual decision.

In the aggregate, the exclusion of so many contexts makes the information a meaningless set of numbers that may or may not mean what the analyst's personal biases, or honestly performed calculations, or sudden mystical insights, might say it means – the information to decide before the analysis is tested through implementation simply isn't there, and after it is tested, any number of theories could be formed on the basis of this data to explain most deviations from the predicted outcome.

Both Popper and Hayek argue that the cure is to bring context back into decision-making. Both agree that this must be done by bringing into the decision loop those millions of individual agents whom the policy is going to affect. Each of these people, say the two philosophers, holds a small piece of the solution, hitherto atomized and unconnected. Brought together in a way that allows the system to benefit from all the information distributed among their multiple, though limited, points of view, these individual decision-makers, interacting in networks of mutually reinforcing competition and cooperation, will produce workable solutions that the distorted and necessarily procrustean vision of any central authority will be unable to achieve. So far, the above statement provides an accurate expression of both discourses.

Popper would argue that the best arena for such competition/cooperation networks would be the forum of public discussion, while Hayek argues that the arena of economic interaction would enable the competing/cooperating agents to make use of information that they cannot articulate in words, and that the consensus evolved by the operation of the free market does not suffer from the weakness of relying on verbal propositions. A discussion forum, argues Hayek, would still be limited to the economically feasible in whatever solution it evolves, and the signals of supply and demand would mark feasible solutions out for adoption much faster than endless rounds of speechifying. Hayek describes this evolution of ordered optimization out of chaotic

competitive/cooperative interactions by frequently misinformed participants as a catallaxy⁷³. According to his writings, the evolution of human consciousness out of the interactions of mindless neurons is an example of the same natural phenomenon⁷⁴.

In fact, Hayek asserts that the Open Society Popper advocates cannot maintain itself in the envisaged open state without giving people liberty in the economic sphere as well as political. Conversely, he claims, economic freedom brings with it the political empowerment of formerly marginalized groups, and makes any ruling clique that originally controlled society rapidly lose its monopoly on power. Any constraint on the freedom of markets, writes Hayek, results in the government being forced to take coercive action to maintain this distortion, marginalizing the groups that advocate its repeal. Even if the distortion on the market is voted through by democratic means, such as in Sweden or in the United States during the New Deal, the government apparatus enforcing this distortion must necessarily exclude input from all groups other than those that toe the party line. Eventually, the apparatus assumes undisguised bureaucratic qualities, beginning to act for the benefit of those interests that profit from the economic constraints it enforces, a process which renders the society increasingly less open as the effects of this constraint accumulate in all spheres of human activity.

On the other hand, a free market brings with it a growth of the middle class and a reduction in poverty, both of which are necessary for a democratic government to function without violent clashes between opposing class interests. As more people assume the creative mental habits of the successful entrepreneur, they become more open to new ideas, and as networks of competition/cooperation spread through every level of society, people seek ways of resolving other problems, not related to business, through bargaining and negotiation rather than prescriptive methods. Thus the principles of

⁷³ Friedrich von Hayek (1983) *Knowledge, Evolution, and Society*, Aman Smith Institute, London, United Kingdom.

⁷⁴ Friederich Hayek (1952) *The Sensory Order: An Inquiry Into the Foundations of Theoretical Psychology*, University of Chicago Press, Chicago, IL.

economic and political catallaxy are not distinct in Hayek's thinking – a certain distribution of information in one sphere, whether optimal or sub-optimal, brings about a like effect in the other.

Distributism and Syndicalism: Early Discourses of Correcting Externalities through Property Rights

The other half of Economic Rationalism's intellectual pedigree focuses on the market as a motivating force, and as a source of legitimacy for specific policy decisions. It also includes arguments from areas previously considered only tangentially related to economics, such as individual and social psychology, jurisprudence, anthropology, even neurobiology. These arguments are used to study the failures and successes of individual cases, none of which quite corresponds to the ideal free market portrayed in economic theory. These cases are studied, and their individual successes and failures tabulated and examined for patterns as the economists seek to discover optimal means through which externalities (that is, costs whose value is not transmitted in the price signals, thus distorting resource allocation away from optimal) can be internalized and included in the market signaling system without imposing further distortions on the system, such as those that come with excessive intervention and regulation.

The notion that people care more about resources they personally control and projects they personally choose to participate in has been known since antiquity⁷⁵, and has certainly been a major topic of discussion through the Enlightenment; theorists from Kant to John Stuart Mill have commented on it, and in the early 20th century, Joseph Alois Schumpeter used his model of wealth creation through the activity of creative and eternally unsatisfied private entrepreneurs to shoot Marx's argument of property-as-expropriation full of holes⁷⁶. Conservationists in the United States, such as George

⁷⁵ Aristotle (4th century BCE) *Politics, The Athenian Constitution*. See his argument for why the best form of government is rule by the middle class.

⁷⁶ Joseph Alois Schumpeter (1942, revised in 1947 and 1950) *Capitalism, Socialism, and Democracy* Harper & Brothers, New York, NY

Perkins Marsh, Gifford Pinchot, and Frederick Billings, have always argued that the best way to save the wilderness was to involve private capital in its wise and sustainable use, and tie the sustainability of each particular portion of a public resource to a particular industrialist's private profit.

As the 19th century ended and the 20th began, the Catholic Church, concerned with the growing alienation and resentment among the working classes, advocated an early version of what modern politicians call "ownership society" as a way to halt the dependence of the poor on the jobs provided by the rich, which the Church argued made the poor susceptible to Communist or nationalist agitation and drove them to violent revolution. This Catholic doctrine of "distributism" advocated by Popes from Leo XIII⁷⁷ to Pius XII, preached that the ownership of the means of production should be spread as far across society as possible – an antidote, they claimed, both to the pernicious seduction of socialism and to the dehumanization of their workers by the corporate and banking leviathans that dominated the developed economies of the day.

Under distributism, people would still be engaged in a capitalistic system of free trade, but they would now be working for themselves as opposed to a boss, and the resulting increase in entrepreneurship and personal responsibility among the newly empowered working class was supposed to bring about a new birth of economic prosperity and social justice⁷⁸. People would cease seeing the businessman as an exploiter or the moneylender as a parasite, because they would be secure in the knowledge that they own the means to make themselves a living, and no one can take that away from them.

This view obviously never found wide acceptance among economists, who saw giant corporations as necessary to minimize transaction costs (Ronald Coase⁷⁹), reduce

⁷⁷ Pope Leo XII (1891) *Rerum Novarum* encyclical "Men always work harder and more readily when they work on that which belongs to them, nay, they learn to love the very soil that yields in response to the labor of their hands, not only food to eat, but an abundance of good things for themselves and those that are dear to them."

⁷⁸ www.distributism.com

⁷⁹ Ronald Coase (1937) *The Nature of the Firm*, available online at

overhead (also Coase⁸⁰), recruit vast amount of capital for large projects in an economically feasible period (Hilferding⁸¹), and amortize entrepreneurs against the risk of ideas that did not work out (Schumpeter). On the other hand, intellectuals and writers readily took to distributism as a convenient vantage point, from which they could criticize the dehumanizing tendencies of both socialism and the corporate oligarchy of trusts and banks⁸². It is therefore not surprising that this philosophy is best summed up by the British writer G.K. Chesterton, a well-known promoter of its goals. Chesterton was supposed to have quipped that: “The problem with capitalism is that there are not enough capitalists⁸³.”

In other words, distributism, though it was not by any means an Economic Rationalist discourse, kept alive the idea that for people to act responsibly and manage resources wisely, they must be owners and not peons. Indeed, since the main argument against distributism lies in the transaction costs that many individual businesspeople would incur building the connections they need in order to operate, and in procuring the necessary clients and suppliers, it can be argued that libertarianism, which abhors oligopolies almost as much as state-run monopolies and advocates a model of social evolution where transaction costs are constantly decreasing, is distributism’s more realistic, post-Hayekian heir.

Another early discourse that attempted to isolate the good points of capitalism in a non-capitalist system was syndicalism. This system derives its name from the French word for “trade union”, and is based on the notion of private ownership of the means of production through public association – in essence have the labor unions own the factories, and distribute the factories’ profit according to a democratically decided

<http://people.bu.edu/vaguirre/courses/bu332>

⁸⁰ Summarized by Steven Suranovic (1997) at <http://internationalecon.com/v1.0/ch80/80c020.html>

⁸¹ Rudolf Hilferding (1910) *Finance Capital: A Study in the Latest Phase of Capitalist Development*, Routledge, Oxford, United Kingdom

⁸² G.K. Chesterton (1910) *What’s Wrong With the World*, (1927) *The Outline of Sanity*, Ignatius Press, San Francisco, Ca.

⁸³ www.distributism.com

internal code of rules. Each full member of such a syndicate owns a share in the profits, and so works as a partner rather than as a proletarian who contributes only labor and receives only a living wage.

This is superior to distributism as a working model, since it at least gets to retain high densities of capital in the form of factories. But syndicalism is unable to compete with more conventional economic arrangements, running into the obvious problem: making every worker a partner nearly freezes the operation of the labor market. How do you suddenly hire 500 new partners? Or dismiss a hundred to stay profitable? This, in turn, imposes a severe distortion on the pricing of goods and services, and thus on investment.

Once again, this discourse is not Economic Rationalist, but it does show a constant search for a way to make it possible to cultivate responsibility and awareness – in this case in the social, not the environmental sphere – by expanding the private ownership of wealth and resources, whether complete or partial⁸⁴. Both distributism and syndicalism demonstrate an intuition, yet unstated but clearly implied, which lies at the core of Economic Rationalism's description of the ways through which markets can become more inclusive, constantly re-weaving their own evolving web of price signals to reflect factors that were previously externalities. It is the idea that problems – whether social or economic, or, in the case we are discussing, environmental -- can be resolved in a manner fair to all parties through a democratization and widespread application of property rights and their enforcement on any party that attempts to make others bear the social costs of its activity.

In the case of distributism, the market externality – though the distributists themselves did not so describe it – was the unequal bargaining power of the unemployed

⁸⁴ A synthesis of this sort of thought with the emergent discourse of environmentalism is available in the book by Ernst Friedrich Schumacher (1973) *Small is Beautiful: A Study of Economics as if People Mattered*, Blond and Briggs Ltd, London UK. It has been developed into the age of modern globalism by Joseph Pearce and Barbara Schumacher (2001), Ernesto Sirolli (1999) and Muhammad Yunus (2003). The modern emphasis is on micro-credit and the growth of microenterprise in Third World nations as the most successful known tool for combating poverty.

worker in the street and the set-for-life plutocrat in his mansion. On the one hand, capital is worthless without labor, so that labor, in theory, can bargain capital down to a fair share of the surplus value. On the other, in practice any individual worker would rather accept being underpaid than not being paid at all, because a capitalist only stands to lose the profit this one worker brings while the worker stands to lose his life to starvation and disease. This enabled the plutocrat to force the worker into accepting deplorable working conditions, excessive hours, cuts in wages, and other indignities so as to avoid going back on the street. The plutocrat did not have to bear the cost of creating alienation, envy, social unrest, propensity towards alcoholism, and other such blights on society – the apparatus of the state assumed these costs. Hence the social cost of the plutocrat's further enrichment, not reflected in the price of hiring labor. By respecting a worker's property right to his or her labor and the means to employ it, distributism sought to make anyone wishing to hire that labor pay the true market price, a process which was supposed to result in the cessation of exploitation and the assumption by the worker of a new mantle of responsible ownership. While the arguments themselves are anti-capitalistic, the underlying logic is nevertheless a precursor of the Economic Rationalist discourse.

In the case of syndicalism, which often used the Marxist concept of surplus value, recognizing the workers' property right to a share in the surplus value generated by a factory was supposed to make this worker less vulnerable to exploitation even in the outwardly-unchanged context of factory labor. The worker would be doing the same thing, but instead of going to build the factory owner a new mansion in Capri, the surplus value would be going to provide every worker with a decent house, milk for his children, a ticket to the theater for him and his wife, and so on. Once again, anyone wishing to hire labor would be forced to yield the surplus value – an integral part of the labor's costs -- to the worker, instead of pocketing it as Marx claimed the capitalist does. In modern terms, Marx's capitalist would be taking advantage of a positive externality and a syndicalist organization of ownership would mean making this capitalist pay the full costs of the service rendered.

In the modern era, syndicalism has been widely used in such socialist nations as Yugoslavia, which had many factories that were owned and managed by the workers. While Yugoslavia never became any more of a worker's paradise than the Soviet Union

did, it did provide the workers with a slightly higher standard of living, and Yugoslavian manufactured goods were generally considered highly desirable in the Warsaw pact nations, demonstrating that Yugoslavian consumer-goods industry never reached the stage of total quality deterioration which characterized the consumer goods industry of the Soviet Union⁸⁵. Even after the collapse of Yugoslavia, syndicalist enterprise remained a very successful developmental tool in the Third World, frequently emerging in regions that desired the benefit of foreign investment, but were too economically or infrastructurally backward to make themselves attractive to foreign capital⁸⁶. For example, until the great burst of economic growth in Thailand of the 1980's, and afterwards in regions of Thailand that the growth did not reach, peasants often clubbed together to put together a textile factory, or a cash crop plantation⁸⁷. After the "market socialism" reforms of 1986, similar phenomena could be found in Laos, whose farmers achieved a certain measure of success, and even investment capital, marketing ecologically sustainable coffee to the First World⁸⁸. Unsurprisingly since these cooperatives operate against an ecological background they cannot wall off with city walls, their environmental practices have often been superior to those of large corporations coming in from around the globe to make a quick profit.

Distributism has also been reinvented in the form of micro-enterprise, and microfinance, which aims to reduce poverty "from the bottom up" by building an up an economically productive class of small proprietors in the place of former inert mass of peasantry. Nations that have place the highest emphasis on building a "society of ownership", such as Senegal, Mozambique, and Bangladesh, are often touted as success

⁸⁵ www.wikipedia.org, articles on "Economy of SFRY" and "Edvard Kardelj"

⁸⁶ Ahmed, M.U. "Financing Rural Industries in Bangladesh," *The Bangladesh Development Studies*, Vol.12, No 1&2

⁸⁷ Simon White (1999) "Creating an Enabling Environment for Micro and Small Development in Thailand" available online at www.ilo.org

⁸⁸ <http://www.veteransforpeace.org/jhai.htm> "tasters working with the prestigious CIRAD coffee research institute in Montpellier, France, pronounced Laotian beans to be among the 12 best coffees in the world."

stories in the unending struggle of Third World nations to make a dent in the poverty of their citizens. The growth of microenterprise in these once-impoverished nations, devastated by decades of war (Mozambique), decades of socialist mismanagement (Senegal), and decades of crushing, unsupportable overpopulation (Bangladesh) has brought about steady and rapid economic growth and a great improvement in cultural attitude towards work and business. Government revenues and attractiveness to corporate investors have raised enough in all three nations to finance much-needed improvements in everything from public health to infrastructure⁸⁹. As poverty is being alleviated, people in these poor nations finally have a choice of occupations that do not destroy the environment the way their attempts at subsistence farming perforce did in a land long since pushed beyond its carrying capacity.

Finally, even in developed nations such as the United States, the basic model of large, vertically integrated corporations tightly regulated from the central office has given way to an explosion in the number of small businesses and independent subcontractors to whom the major corporations farm out almost all non-essential tasks, naturally multiplying the number of niches in the nation's economic "ecology". More companies than ever offer their stock for purchase by the public, and a greater percentage of the public than ever before owns stock in publicly traded companies. Even towards their internal offices, the corporations have adopted a new culture of governance, emphasizing creative and independent thought by regional office leaders, so that sometimes a corporation evolves into something resembling a network of closely cooperating businesses rather than the old organizational pyramid with a narrow apex. The overall trend in global capitalism, both in the First World and the Third, appears to be towards an increasing emphasis on democratization and a wider distribution of ownership assets – combined with increasing humanization of the market and greater emphasis on independent, nonconformist thinking. Not coincidentally, the period also sees increasing concern of companies with their environment-related public image, and active attempts by corporations to operate in an ecologically sustainable manner.

⁸⁹ www.microfinancegateway.org

Coase's Theorem: It's all In the Transaction Costs

The next major advance came when the recognition that social costs can be negotiated away through the privatization of the formerly unattended resource entered mainstream capitalist reasoning. This was largely due to the work of Ronald Coase, a British economist who studied the assignment of broadcasting frequencies to radio stations. Obviously it would hardly be a good idea to have two stations trying to broadcast on the same frequency, but a given frequency would be more desirable to some broadcasters than to others. Coase was taken with the question: is it better to assign frequencies to broadcasters or to allow them to bargain it out between themselves which of them was to get which frequency? This led him to the larger nature of the question: under what circumstances would an externality (examples he gives are smoke from a factory or a polluted stream) be better controlled by government action, and under what circumstances can the market internalize the externality through bargaining between the aggrieved and aggrieving parties?

The answer, Coase found, (and the panel which decides on the Nobel Prize for economics agreed with him in 1991) lies in transaction costs. Essentially these are the costs of finding something you want and time spent bargaining, so that when the economic agent, such as a firm, actually pays for the good or service it purchases, the real cost of the item to the buyer is in fact larger than the price that the seller receives for it. Obviously the market economy of the past several centuries has been evolving to minimize these as far as possible, and such institutions as the bank, the insurance company, the stock market, the modern firm, and the modern practice of venture capitalism are all, whatever else they might be, ways of minimizing the costs of bringing together supply and demand.

Coase found that in a hypothetical situation where transaction costs are zero, it does not matter what situation the various interested parties start out in – provided property rights are enforced strictly, people will negotiate an equitable solution. For example, in the case of radio stations, if two stations interfere with each other's broadcasting, the one that stands to gain the greatest profit from having uninterrupted access to the frequency band will pay off the other station and the two would strike a

mutually advantageous deal. In the real world, where transaction costs do exist, an outside agent (the government) might have to allocate property to the party assigning it the greatest utility. But, as Hayek has demonstrated, governments are fallible, and it is usually better to bring the transaction costs down and allow the parties to negotiate a deal that both consider fair – among other things, this approach is the most likely to minimize resistance from whichever party would not get the coveted position or resource.

Coase's Theorem, as it came to be known, provided a ready solution to the criticism faced by advocates of the free market with regard to "market failures", such as pollution. The libertarian movement in the United States, which became the Libertarian Party in 1971, could now successfully argue that these "market failures" are nothing more than the result of transaction costs imposed on the free flow of money by government regulation. Make it easier for free economic agents to do business, argue libertarians, and transaction costs will go down to a point where such matters can be settled through negotiation between the entities involved. At this point the critics usually ask: how can you settle a case where, absent a government-imposed restraint, it is clearly profitable for a firm to pollute than to go clean, using nothing more than economic negotiation. The libertarian answer is provided in the two examples below.

The Libertarian Case: Property Rights plus Low Transaction Costs Equal Internalized Social Costs

First, of all, argue libertarians, since government (as proven by Hayek) never has a full picture of the facts, any intervention it undertakes itself carries a social cost. Moreover, by establishing a precedence of reliance on government intervention, government action opens the door for further such social costs, up to the point where these social costs of government action costs society far more than the original cost of pollution. Hence the need, argue the libertarians, for individuals themselves to come together and impose restraints on the polluter by using their power to influence the polluter's profit margin.

Suppose we have a case such as that mentioned by Coase himself in his article "The Problem of Social Cost". Suppose a factory is dumping waste in a stream. If the stream had been on private property, it's obvious that the owner can just take the factory

to court for damage to the property – including the aesthetic damage to the stream, the death of the fish and water birds, the damage to soil and groundwater, the threat to the health of the owner’s family and pets, and so on. So we see that the externality only arises when the stream does not belong to anyone in particular.

If everyone who lived near that stream was forced to determine exactly how much of their health decline had been due to the pollution in this particular stream, and then to negotiate with the polluter for compensation on a separate basis, the transaction costs of doing so would have been much too great to curb the social cost without the government stepping in. Essentially the would-be negotiators would have to undertake a precise statistical evaluation of their lives while exposed to the pollutant, then the arduous process of arguing in court that their arguments blaming the polluter for their health problems are in fact valid.

But if the different people who live along the banks of the stream find some way to aggregate their claims on the purity of the water, through a process similar to the formation of homeowners’ associations in a suburban development, the transaction costs of their claim on the polluting factory can decrease. Now it is only one entity, acting through its elected representatives and supported by resources that the members produce by clubbing together (so that each can easily afford the costs) that collects evidence, makes the assessment, and argues in court that a violation of its members’ property rights took place. Any costs won by the association would be distributed only among its membership, thus eliminating the problem of free riders. Just as a homeowner’s association has the legal power to prevent a new homeowner from rebuilding a nearby house into the shape of a purple giraffe due to the damage that such a building would cause to real estate values of their own houses, so an association of citizens living next to a particular stream, river, forest or mountain can force a polluter to pay the social cost that the pollution of this locale inflicts on the members of the association.

Once the transaction costs of coming together, collecting the evidence and paying for an expert analysis are out of the way, it can often be easy for the association to demonstrate that a polluted stream is, in fact, bad for the residents. Their property rights, in the form of the monetary valuation of the health and comfort that they lost, were taken from them without compensation. Even the real estate value of their property in the more

conventional sense has been impacted, since a house next to a polluted stream is worth less than a house next to a pristine one. The same evidence could very well demonstrate that no, the property owners' own septic tanks could not have been responsible for this level of pollution, thus pinning the responsibility on the factory.

The situation would be analogous to someone opening a city dump and leaching toxic material into the soil of a backyard – in the legal sense, the stream can be considered the backyard of everyone living in the neighborhood, with every property owner nearby holding a share, just like a stockholder owns a quantifiable share in the success or failure of a large corporation even though he or she does not own the corporation in a more conventional sense. A claims court could very well recognize the merits of this argument, forcing the polluting factory to pay the cost of their activity, and thus internalizing the externality⁹⁰.

The court won't shut the factory down, but it could well force it to pay Streamside Inc. the costs that were hitherto absorbed by the externality, making pollution less profitable. Alternatively, the factory can negotiate with Streamside on its own, agreeing with the chosen representatives of every property owner in the region on a way it can stop polluting the stream without its bottom line suffering excessively. Negotiations might help the factory avoid the costs of a court case, and perhaps get off with a cheaper price tag. For example, the factory can stop all discharges in the stream if the local residents agree to allow the construction of an incinerator where the waste can be burned and the fumes sequestered away. The citizens might not have permitted the construction otherwise, but knowing that the factory will have to pay the cost of treating any health problems it causes would make them more likely to agree to compromises where they

⁹⁰ Dryzek (1997) writes on page 106 “The legal system would come to play an extended role in any such regime.” This is not necessarily true for the time after this privatization of streams was demonstrated as a workable system. The associations of property-owners might prefer to negotiate rather than grapple with the other side's lawyers, and the factory might believe that it could get away with a smaller price for its activities if it settled with the property-owners' association. The threat of legal action would have to be implicit in these negotiations, but it is quite possible that the number of actual lawsuits would decrease once the courts have established that the factory *can* be successfully sued.

would otherwise feel are merely covers for a new attempt by the polluter to get a free ride at their expense.

As a side issue, the possibility of negotiated end to pollution creates the problem of free riders once again, since if the factory stops polluting the stream altogether, it could benefit those property owners who took no part in the negotiations or collecting the evidence. There are different ways for the association to deal with that – the most obvious one being a recruiting drive that gives joiners other benefits, such as the association subsidizing a fraction of their house mortgages, or, in a poor neighborhood, starting a club to help residents with house repair, holding a raffle, or selling tickets to a social event. If the main aim of the association is to protect the pond's fishing stocks, it might attempt to woo reluctant joiners by raffling off some fishing tackle, or perhaps a powerboat. As long as the potential payoff to the association is significantly greater than the costs of wooing free riders, but the payoff to potential free riders, though small, is immediate and evident, it is possible for the association to keep the free rider problem down to a tolerable level. In the end, if the transaction costs are made low enough by developments in science and the legal system, a few free riders will not even make any difference: if even a few local property-owners come together and win a court case, the firm will have to deal with the risk that the rest of them, attracted by the payout, will seek their own, so that the risk alone will force the polluter to seek an alternative.

The transaction costs of every individual citizen seeking his or her own damages are reduced by the fact that only one entity negotiates with the polluter now, or, if necessary, refers the matter to a civil claims court. The process is also simplified by the lack of any need to assess the specific damage done by the pollution to the particular interests of every resident. Instead, the association can hire an insurance company to perform a risk assessment for a hypothetical resident living next to a clean and then next to a polluted stream, and then multiply the assessment by the number of association members. The resulting number can then be used as a starting point in the negotiations.

Notice that the only government authority necessary for the process is the court

system⁹¹. Otherwise, the problem is resolved through pure legal or financial negotiations, with every member, in effect, enforcing his or her property rights to a fraction of the stream that he or she uses personally, as well as to personal values, like health and aesthetic pleasure, that the pollution of the stream would impact.

The fun begins when the various interest groups will realize that a particular property owner's interest in the stream can be bought out, just as a stock owner may be persuaded to yield his or her share in the company to a different firm attempting a takeover. In some cases, the polluting company will seek to do so, in others, a conservation group interested in stopping the polluting company from manipulating the property-owners. In some cases, the situation may evolve into a sort of pollution-credits trading applied to stream water, with the conservationists and the environmentalists attempting to bid the costs of buying property-owners out up past the point where the polluter is interested in doing so. In others, the polluting power plant might find the river or stream to be worth too much as an investment to ruin it with polluting discharges – after all, provided their actions do not ruin the value of the water for their neighbors, as long as proper safeguards against thermal pollution are in place, the presence of a nearby factory using water for cooling purposes increases the value of an individual share in the stream, and is thus in a stakeholder's best interest.

In the second example we have air pollution – represented by the typical coal-fired Midwestern power plant. Because the wind in the Midwest is usually blowing towards New England, the power plant can use the wind direction as a positive externality, saving itself the cost of dealing with the heavy metal particles and radioactive isotopes rising from its smokestacks. If the emissions settled over the state the plant's home state instead, the plant owners might have had to deal with public outrage from the residents, and spend money upgrading its outdated equipment, sequestering the particulates with expensive technology, or spending a lot of money on legal fees. Instead it is the residents of New England that get to suffer.

⁹¹ Murray N. Rothbard (1982, 1997, 2002) *Law, Property Rights, and Air Pollution*, available online from www.mises.org

Obviously this is an externality harder to correct than a polluted stream, since by the time the pollution gets to New England states it is already mixed with pollution from many other sources, such as car exhaust, pollution from many other different power plants, factories, and so forth. As Dryzek puts it “Am I coughing because of the methane from a nearby landfill, heavy metals from a toxic waste incinerator, smog coming from car exhaust...? Or is it because my neighbor is burning her garbage?”⁹²

Of course a libertarian theorist would answer Dryzek that it does not matter why he is coughing on any particular day – in every big city, insurance companies employ thousands of expert mathematicians using tried and true methods of estimating risk to determine the exact contribution of each particular factor to the illnesses bedeviling the residence of every particular region. The percentage-wise contribution of the landfill, the incinerator, the car exhaust, and all other factors combining to erode Dryzek’s health would swiftly be determined by any insurance firm that knew its business, and published in a report Dryzek could obtain and peruse to his satisfaction. A lot of such calculations are regularly done every day for insurance purposes, so that the calculations are already paid for by the premiums of insurance buyers, with no need to commission them specifically for the event. In those cases where there is such a need, we, and Dryzek, must remember that the risk need not even be stated with a very great degree of precision. For an insurance policy the risk needs to be evaluated as exactly as possible so that the company will know how likely it is to have to pay. But for a proof that a factory does in fact contribute to health problems in a particular state, an estimate will do.

The levels of sulfur dioxide in the air could be estimated mathematically, and so could their part in the harm our hypothetical Dryzek has suffered. And since the amount of sulfur dioxide emitted by each Midwestern coal-fired power plant, and the pattern of its scattering by the winds, would be known, the fraction of sulfur dioxide in the air above Dryzek’s head (if Dryzek lived in New England rather than Australia) which is due to the emissions from this particular plant and no other could also be estimated, even if it was not known precisely. So could the contribution of radioactive particles from the

⁹² Dryzek (1997), page 106

power plant's emissions to Dryzek's increased risk of cancer, the contribution of the plant's mercury emissions to the increased risk of disease striking Dryzek's nervous system, and the harm done by all of these factors to the nonhuman elements of the New England ecology. Estimates and statistical studies exist that originate from hospitals, public health studies, various environmentalist advocacy groups, Earth Science departments at universities and numerous other sources, measuring the likely increase in health risk an added unit of coal-fired fumes pose to a baby, a grown man, a grown woman, a child, a teenager, a non-smoker, a smoker, a diabetic, and so forth. Very often these estimates disagree on the precise probability of illness, but no reputable study claims that fumes from coal-fired plants do not increase the risk of disease by some amount. Since we are discussing claims made by organizations rather than by private citizens, it makes estimation of risks easier as well – the idiosyncrasies that make calculating the risk to a specific person so difficult can be averaged away when estimating the risk to a group.

Just because it is impossible to prove that a particular particle that made somebody sick originated from a certain power plant three states upwind and two blocks to the left, does not mean that the fraction of this plant's contribution to the probability of an average inhabitant of, say, a large city like Worcester, getting sick cannot be known with some degree of verifiability⁹³. The less precise an estimate becomes, the more certain it is likely to be – it is difficult to prove that situation X increases the group members' risk of illness by 37%, but much easier to prove that the risk is increased by between 5% and 45%, and even the lowest estimate is usually considered unacceptable by people who have to live with that risk from year to year! Even if the estimate is only exact to within, say, 50% -- as long as it could be conclusively shown that the risk of illness has gone up due to the factory's activity, the jury is unlikely to find itself sympathizing with the polluter, and if it errs, will probably err on the side of too great a punishment than too small (think of the penalties with which a jury hit McDonalds for, in

⁹³ For details, refer to: www.actuary.net

effect, making its coffee hot enough to taste good⁹⁴.) Even if the polluter wins, it would little appreciate having the amount of heavy metal particles and radioactive isotopes it emits paraded in court – both for PR reasons, and because it would increase the risk that some other claimant, who has done his or her homework better, could hit the polluter with a better-managed claim and win this time.

Obviously each particular risk related to human health would then be reflected in the premiums Dryzek would have to pay to obtain insurance coverage. So would his next-door neighbor. Since the actions of the polluter, no matter what state the polluter is in, are obviously costing New England residents in concrete and delineable ways that can readily be expressed as monetary values, a civil suit brought against this polluter can stand a good chance of succeeding. Such a suit could demonstrate the polluting power plant's share in the damage done to the plaintiffs in the form of money the plaintiffs spend on raised insurance premiums, on doctors, the monetary losses that their businesses suffer due to loss of worker productivity, and many other factors. Since the chance of the lawsuit succeeding is nonzero, and since one day the power plant would need to install modern equipment in any event, the plant management may very well prefer to negotiate and deal with its emissions problem voluntarily.

It could be argued that there have been numerous lawsuits against polluters so far, and they have not yet succeeded in getting them to stop. On the other hand, those suits mostly intended to obtain a cease-and-desist order from courts, which resulted in the years of legal wrangling described in the section on Administrative Rationalism. An attempt to win back the costs of insurance premiums is more likely to succeed; in addition, as the sciences of epidemiology and risk assessment develop, the estimation of risk due to emissions would be made increasingly easier. Moreover, a culture more devoted to libertarian principles than our own would change the legal code to make businesses more responsible for their impact on individual lives, as a quid pro quo for the

⁹⁴ www.wikipedia.org, article for “Stella Liebeck”. And yes, she was burned very badly, and yes, McDonald treated her very shabbily before she sued, but anybody in the world should know that hot coffee can burn! McDonalds was not punished for making hot coffee *per se*, but for being the stereotypical evil corporation in the jury's minds.

increased freedom they will enjoy from regulation – thus a claim against a polluter would be easier to pursue in a libertarian context than in a regulatory one.

It would naturally be harder to estimate the degree to which damage to New England's natural ecosystems could be valued as monetary losses of private citizens, but obviously New England states spend a certain fraction of their GDP on safeguarding the ecosystem – measures that are approved by the voting public. Public surveys indicate that most New Englanders would support the spending of still more money if it was necessary to preserve the living ecology of their home states. Thus it would be possible to assign ecological damage a monetary value measured by how much money New Englanders would on average be willing to spend to undo it. After all, any harm to the natural world, no matter if it is done to a wetland, a lake, a forest, a backyard, or a field, would still lower the area's real estate value, thus constituting damage to the property rights of either individual New Englanders, or of the various state governments, depending on whether the land was public or private.

So we have multiple potential claimants to the polluter's money. It could be an association of New England citizens frustrated by their high insurance premiums – or of New England businesses frustrated by the high costs of the insurance premiums they must pay in providing their employees with an insurance plan. Perhaps it could be the insurance company itself, frustrated at being forced to pay money to cover the treatment of more sick people – even if most of these costs are passed down to customers as premium rates, given the insidious nature of pollution, some of these people would get sick without their added risk being reflected in the rates they pay, and it could be quite possible to establish this fact upon closer investigation and then estimate the likelihood of such an event. Perhaps it could be an association of New England taxpayers frustrated at the tax dollars they spend on environmental preservation going to waste because pollution is being dumped on them from, outside state borders.

If any or all of these entities bring a lawsuit against the Midwestern power plant and cited the various estimates of health and environmental damages the plant's action was causing, it is quite possible that a court could rule in their favor. In any event such an outcome is possible provided the tort law system was reformed along more rational lines, helping people recover what really is due them, as opposed to the current tort

system, which encourages frivolous lawsuits that only serve to drive up costs of necessary services.

From these two examples, we can see that as long as the law shows a clear support for property rights, and as long as the transaction costs of seeking justice are kept low by the aggregation of private complaints into an association seeking to recoup the damages of all its members together, it is possible to make companies pay for the social costs of their activities without resorting to government-imposed prohibitions. Even when the social costs are spread out between many victims, some of them not even human, as in the case of water or air pollution, it is still possible to quantify them and aggregate the damage done to individuals into claims made by organizations. Thus the polluting firms will find themselves unable to escape the costs their activity imposes on others.

The Market Response to Internalization

Since businesses will hardly wish to draw back from their current levels of activity simply because they will now have to pay a fair price for the costs that were previously written off due to an externality, in effect this hypothetical new interpretation of property rights is likely to result in two parallel outcomes. The first of these would be an extremely intense infusion of investment capital into all R&D efforts and proposals with any hope of finding technologies that would be able to minimize industry-related damage to public health and the natural world. Since the costs of producing pollution would now have to be paid, the market for reducing pollution would expand in proportion, transforming the investment priorities of banks and venture capital firms.

The second outcome is likely to be a greatly reduced anti-environmentalist agitation on the part of businesses. It will be much harder for the business lobby to protest against having to consider the environmental consequences of their actions: while a mandate from a regulatory agency, or from Congress, would be resisted as an unwelcome distortion of the catallaxy process, here the restriction upon it would be caused by the market laws themselves. A company under this hypothetical system, which is based solely on an improved enforcement of property claims akin to that already practiced within any society that recognizes property rights to capital stock, would

always be free not to care for the environment -- as long as it finds it preferable to pay the real cost of its activities.

Thus environmental measures will be just sound business rather than a forced imposition: the company will classify them under “cutting costs”, together with all other efficiency improvements such as fuel efficiencies and payroll efficiencies. Of course in a libertarian environment industry giants will be forced to pay more attention to all forms of efficiency than they did before, since they would no longer be able to depend upon the “corporate welfare” policies which routinely allowed them to get away with practices that would have bankrupted a smaller company. This will change the general climate of investment in general, with Big Business becoming a great deal more receptive to investing in innovative proposals in order to improve efficiency, thus creating markets for such technologies that would allow smaller businesses to do likewise.

Even though the various boards of directors will hardly be thrilled with the percentage of their yearly operating budget that they must now assign to paying costs the market did not reflect at all only a year ago, these boards would hardly find a sympathetic audience if they do complain. The enforcement of property rights is an absolutely necessary part of a free-market economy, and whatever the objections of any given firm, Hayek and his heirs have proven that resources are always allocated more efficiently when the market reflects more real-world information rather than less. So this new way of internalizing externalities, through civil claims lawsuits and business negotiations rather than through government mandates, would enjoy a far greater legitimacy with advocates of economic liberty than the old Administrative Rationalist approach of direct regulation. That is not to say industry giants will like it at first, but they will be forced to accept them as a reverse side of the same rights to property that recognizes their rights to enforce a claim against someone who owes them money. As years go by they will find the new rules a fair price to pay in exchange for the removal of our current regulatory network.

In fact, according to Hayek’s concept of intertemporal equilibrium, the very overproduction of items favored by the old externalities, such as steel and electric power, will make it easier for any given firm to rebuild its activities to be clean and non-polluting – after all, the previous overproduction has made the overproduced goods and

services, and all other goods and services that depend on these overproduced goods and services for their own production, much cheaper than they would otherwise be. At the same time, pollution made the people more interested in using their new wealth to buy quality of life, including cleaner air and water. Thus gives any firm seeking to develop nonpolluting and yet economically competitive methods of production a greater pool of surplus capital to draw on, and a larger number of customers willing to tide it over during transition by paying a little extra for a non-polluting version of the product. Thus the very disequilibrium that resulted in an overproduction of polluting goods and services will aid in the replacement of the old methods for producing them with new, less wasteful, and non-polluting ones, which give the firms using them an actual competitive advantage which, once the transition is completed, more than offsets the advantage provided by the old externality.

Notice that after internalization, it will always be possible for businesses to try to redistribute the financial burden of these newly internalized costs through negotiations among themselves – in fact some of them, like the coal-fired power plants mentioned above, will just about have to do so. Power plants have immense refurbishment costs, and under new market conditions these old coal-fired plants would need to raise vast volumes of liquid capital just to replace their old coal-fired turbines with new gas-fired ones. Forcing these power plants to pay off the social cost of their past activity just as they need all the money they can raise to prevent the incurrence of more social costs in the future would only slow down the pace of change. From the needs of mired establishments like these power plants, a ready market for pollution credit would develop -- something that a forward-looking bank could take ready advantage of.

Suppose a firm that manages to avoid most of these newly internalized costs due to its greener operational practices. Using either the money it saves through its greater environmental efficiency, or the money a bank to whom it demonstrates such efficiency can readily supply it, the green firm can sell a fraction of its green status to dirtier businesses, in effect agreeing to bear some of their restructuring costs today in exchange for compensation tomorrow, when the dirty firm is itself made clean through restructuring and re-equipment. After the dirtier firm has refurbished itself with more modern technologies, and made enough money, it pays off the green firm, and the green

firm can pay off the bank that made the original loan.

In a situation like this, the green firm acts in a way that closely parallels a technology licensing process. In one case, intellectual capital is given away in exchange for money in the future, with the IP owner careful to select a firm that can use the technology best and provide the greatest rate of return on its license. In the second, the firm with the greener status makes financial capital available in exchange for the dirtier firm changing its ways, multiplying the loan, and providing the green firm with a return on its investment. The bank which supplies the capital could also make the loan directly to the dirty firm, though this would be riskier, since having a firm with established green credentials act as a go-between would guarantee that at least the greener firm would be on a more stable financial footing during the transition period, and is therefore less likely to lose the bank's money. In addition, by having experience with pollution-reducing techniques and technologies, the greener firm could make a better judgment as to which firm is likely to do the best job of reinventing itself, and is thus most likely to pay the money back.

The arrangement can be formalized through the financial institution of a "pollution futures market", where green firms can extend "pollution credits" to businesses that must bear the new costs but need time to restructure before they can stop incurring more of them. The greener the firm, the more pollution credits it will be able to issue, because during the market re-adjustment following internalization of the social cost, suppliers of capital would give it the highest credit rating. Checking the green claims of different firms in order to determine their credit rating would also be an effective way for the bank to verify that a firm is as green as it claims to be, preventing false claims (and of course the various stakeholder groups ready to make tort claims against polluters will be keeping their own records). The total amount of pollution credits circulating in the economy would thus be determined by two factors – the degree to which the new tort law system is able to bring the social costs of pollution back to the firm, and the degree to which firms manage to devise new and ingenious ways to reduce their own emissions, attracting credit thereby.

A third factor would be the priorities of the pollution victims: they might prefer constraints on their local factories to minimize pollution, or the removal of such

constraints to maximize job creation. A town that depends on industry to provide the population with jobs may prefer not to make tort claims on the major employers for fear of driving the factories away – and while it might be delighted to make such claims on a factory located in a town some miles upwind, if the town chooses to tolerate its local polluters it is unlikely to obtain a favorable decision in an attempt to sue polluters located elsewhere! On the other hand, a city like Seattle is unlikely to permit high levels of pollution in its territory for any price at all – it is already a thriving hub of many lucrative industries, such as aeronautic engineering, software and electronics. It is wealthy enough to ignore the potential jobs to be gained from becoming more pollution-tolerant, and so any business seeking to take advantage of operating in Seattle will have to maintain standards of cleanliness and efficiency higher than the citizens of, say, Mississippi are likely to demand of a business seeking to operate there.

Thus every region would have to choose: would its citizens prefer the jobs a polluting factory brings along with it, or the clean air that they would obtain when their tort claims may potentially force it to relocate? As a region solves its problems with unemployment, it is likely to set higher standards of emissions it is willing to tolerate, and the factories that have been attracted there in the meantime would have to face the costs of their actions. This way, the free market would always provide the people what they demand most. Of course even in a city willing to tolerate pollution, a factory might still be subject to claims from cities downwind receiving pollution from it without even the compensation of jobs for their trouble. This would prevent a factory's management from believing that it can evade the social cost it incurs by relocating – relocation will certainly help, but never completely abolish the price of producing toxic chemicals.

As factories across the nation retool themselves to be less polluting, the market for manufacturing pollution-control technology will receive a powerful growth signal that would create jobs even as the polluting factory's idleness during the retooling process may temporarily destroy them. In this manner, the economy will be able to afford the introduction of non-polluting technologies, and the populist backlash that so often accompanies environmentalist regulation will not manifest itself when the change is mandated by the market forces themselves.

This disparity between the needs of different markets could create different forms

of pollution credits, some more valuable, backed by the issuing firm all across the nation, or even the globe, with no questions asked regarding the buying firm's plans for restructuring, and some less valuable, backed only as long as the given firm operates in a particular area, or adheres to a pre-approved restructuring plan. This multiplicity of options in buying pollution futures will provide an even better amortization of the

The cost of paying a fair price for the environmental damage that a firm is currently inflicting will serve as an unofficial upper limit on the cost of the "pollution credit" which the green firm sells to the dirty one – a firm can pay the cost of its environmentally harmful activity today, or it can have the greener firm cover part or all of the social cost it needs to repay, and assume a debt to that greener firm to be paid in the future, when the dirty firm has already restructured its operations and being able to pollute is no longer a matter of solvency or bankruptcy to it. This sort of trading will allow the current polluters to reorganize their methods of production without imposing burdens of price that would prevent them from finding the capital needed to do so. At the same time, since the cost of polluting would still need to be paid, the trading would also provide every incentive for the polluter to re-organize fast!

Or, on the contrary, a firm that is relatively green today, but anticipates a need to pollute more in the future due to some project it will need to undertake, can acquire promises from greener but currently needier firms to cover its environmental-damage costs in the future in exchange for money in the present. In effect, by selling the financial ability to afford polluting, firms involved in such a market will shift the costs of internalizing environmental damage to those among them who could afford it best – and since the costs will still be paid for, these pollution futures markets will drive every firm involved to implement greener technologies as fast as it can.

If these "polluting credits" are to be considered as quanta, with each credit giving a company the right to pollute a certain amount -- for example, a single credit could entitle the holder to emit an amount of pollutants equivalent to \$100 worth of social cost, as incurred by an average coal-burning power plant -- it can be possible for a firm which emits less than that average to get more "pollution mileage" out of the credit it purchases than a firm whose actual emissions are greater. This would naturally be an incentive for the would-be buyer of pollution credits to improve its ways, as well as the would-be

seller. In addition, the environmentalist groups themselves can always bid for pollution futures offered for sale by a clean firm, removing them from the market. Since any clean firm can only afford to offer a finite amount of pollution credits on the market (after all, each credit represents an obligation on the part of the creditor to pay the social costs of this amount of emissions if the credit is used within a limited period of time), this action by the environmentalist would drive the price of a single pollution credit upwards, resulting in greater economic pressure on every firm in the market to cut its total output of polluting emissions⁹⁵.

More Solutions through Clear Property Rights

These sorts of market-based approaches can bring an effective and satisfactory resolution to any number of problems that otherwise result in years of futile debate. For example, Dryzek cites a proposition to privatize the world's population of whales, with buyers able to track their new purchases by using radio tags to keep track of each individual. This way, a whaler will know that to kill another whale, he or she will either have to pay the whale's cost, or lose the opportunity cost of selling a whale to someone else. Under such a system all whalers will have to pay careful attention to the size and health of the whale stocks they do own. If conservationists and whale-rights groups enter the market and bid up the costs of a whale beyond what the demand for whale meat, baleen and blubber can justify, some whales will be kept completely out of danger of ever being harpooned.

Similar projects may succeed with stocks of schooling fish, since a school of fish can be tracked by radar, radio tags, and harmless reporter chemicals, enabling the school's owner to keep track of its size, health, and ability to support harvesting. Or a

⁹⁵ The trading scheme in this section is essentially the plan for pollution credits trading advocated by eco-capitalists and Pigovians, adapted to function in a libertarian environment where the main mechanism of restraining pollution by industry is the enforcement of individual property rights rather than government decree. It allows the beneficial effects of pollution trading to work even in a non-regulatory environment. Of course in a less than perfectly libertarian situation, it can still be implemented through Pigovian methods.

system of tradable quotas may be instituted, with the fisher fleets of a given region where fish are growing scarce able to buy fishing quotas from regions where fish are plentiful while the fishing stocks in their former region of activity recover their numbers⁹⁶.

Endangered species can be privatized by giving zoos, conservation groups, philanthropists, and other interested parties property rights in the genetic markers identifying a particular gene pool. Ecosystems such as the Amazon rain forests can be privatized by selling research firms the right to harvest the ecosystem for suitable genes that can be patented and used for pharmaceutical research – or to developers for the right to harvest them sustainably for wild-growing medicinal plants. Since it has been calculated that sustainably harvesting a rainforest this way would bring in six times the amount of profit than clear-cutting it and using the land to pasture cattle⁹⁷, those who buy rain forests for this purpose would easily be able to outbid the ranchers, since the sustainable harvesters' backers would be willing to advance them more money.

The progress of modern biology and biotechnology makes it much easier to privatize endangered species effectively. For example, an owner of a forest inhabited by a rare moth, or an empty plot which serves as the habitat for an endangered beetle, would once have found it more profitable to sell the timber or build a parking lot under most circumstances. But today, biotechnology makes a rare bird, insect, fungus or snail into a potential treasure trove of patentable genes. If the gene is similar to that already used by some other firm, it is a way to get around the other firm's patent; if it is different, it could have potential applications that the gene's discoverer might not even guess at when he or she is isolating it.

Any habitat that harbors such potentially useful species could potentially be protected to keep wild-type examples of the species around as a source of patentable genetic variation – something that a lab, which deals in specimens of very limited baseline genetic diversity, would find it difficult to provide. Thus simply by existing, a

⁹⁶ D.L. Burke (2000) Management Infrastructure for Rights-Based Fishing, available online at www.fao.org

⁹⁷ <http://www.rain-tree.com/facts.htm>

plant, animal, or even a microbe with patentable genes might extend its value over the ecosystem that supports it, preventing its destruction as well as its own. In any event, in a modern economy, a rare bird, beetle, or flower is potentially a better money-maker than timber or a mini-mall, and as more biotechnology firms open across the nation, the potential worth of ecological habitats as habitats keeps on increasing.

Firms that produce consumer items that may not actually generate pollutants in their manufacture, but are themselves harmful to public health when used, such as asbestos and tobacco, can be forced to set aside a portion of their profits to sponsor cancer research or addiction treatment, not by any government decree, but just from a voluntary effort to offset the now-internalized social costs of the hazardous materials that they produce. It is possible that firms that agree to sponsor some research center to deal with the problem their product causes will get off easier, in terms of money spent, than firms that simply agree to pay the costs to the health of the aggrieved parties. It is also possible that the aggrieved parties may prefer the firm's voluntary sponsorship of the search for a solution to a legal battle.

Even in cases where it is clearly demonstrated that a firm does not impose the effects of its product on any party not willing to buy it (and thereby absolve the firm of any effects it might have) a firm that sell harmful products like asbestos would likely support the a plan that has it sponsor a research center into asbestos' health effects, simply to avoid being labeled as a merchant of death – in a modern world, as the amount of available consumer choices keeps on increasing, the value of a firm's PR will be too great for a firm to ignore. Thus a firm that faces a negative public image would need not only to offset the social cost of its product – it would need to be seen doing so, as publicly as possible. A research effort to make the product harmless “again” would be an ideal project for such a firm to undertake.

Non-Libertarian Capitalism: Internalization through Policy

The above discussion of internalization and financial mechanisms made possible through clear property rights and minimal transaction costs characterizes the libertarian strain of the Economic Rationalist discourse. This strain is far from the only one: there are many Economic Rationalists who feel that the libertarian reliance on nothing but the

action of an aggrieved party in defense of its property rights ignores cases when the public is apathetic or the transaction costs, though low in themselves, are compounded by the opportunity cost of pursuing redress, which few people wish to undertake. In other words, even though the health risk posed by the power plant upwind of me is real enough, I might prefer to put up with the risk rather than take the time out of my schedule, seek out like-minded people, and make a claim that my property rights are being violated. Even though it might raise my chances of dying in 30 years, day to day, the risk is quite tolerable.

Firms that have to provide health insurance for their employees may dislike the premium prices they must pay to account for the health risks imposed by pollution, but a firm has many other concerns that occupy its time or money, and it is by no means guaranteed that they will band together and demand redress from the polluters; in addition the decision of the court might not be in their favor and the firm, which already faces many risks of losses in its regular operations, would not necessarily wish to assume yet another risk of spending money and time on a possible pipe dream.

Because of this, say these critics of libertarianism, though the regulation of all externalities through property rights may be possible in the future, when technology will make transaction costs still lower and the monitoring of the pollutants' effects still easier, nevertheless our environment, and the people hurt by its hurts, are suffering in the present. The society cannot, say these critics, await the legal and technological breakthroughs necessary for this libertarian paradise to dawn. They argue that although the social cost imposed by the action of the government is real enough, sometimes it is a better risk to assume than trusting in a market where people often have unrealistic ideas concerning risk and do not bother to pursue redress for obvious property-right violations as long as such violations play themselves out over decades instead of days. But the effects of the externalities imposed by such a market are just as lethal, whether or not they are seen for what they are.

Because of these considerations, while these people are still Economic Rationalists, they do not see anything wrong with the government taking action to bring social costs back to externality-using businesses – not through prohibiting the action, but through taxing it in a manner graduated with the amount of damage the particular firm is

doing to society, imposing higher taxes on the worse offender according to principles established by the British economist Arthur Pigou.⁹⁸ The taxes could be collected for any purpose, just like other taxes established by the government, or they could be earmarked only for the redress of a particular social ill, like taxing asbestos factories to do nothing but build cancer research institutes, tobacco companies to establish addiction treatment clinics, fast food and junk food to finance programs promoting healthy lifestyles, or brothels to establish free clinics for STDs. Note that the absence of direct regulations means that the offending business is free to deal with reducing its social cost and moving to a lower tax bracket in any way it sees fit: this system has an inherent flexibility largely absent from regulatory discourses. Moreover, when regulatory standards are reached, the incentive to reduce pollution further disappears, whereas with Pigovian taxes, this incentive is always there.

Opinion is also split on how much to tax socially costly businesses whose customers engage in practices harmful to themselves of their own free will – for example it could be argued that the customer of a tobacco company agrees to bear the social cost of his or her bad habit; had he or she chosen to do use them, there is a wide selection of pharmaceuticals and other aids to quitting smoking, which are all readily provided by the market. Under such circumstances it seems unfair to tax the cigarette makers. Under the same argument, if a community chooses to attract jobs by setting low pollution standards, it is their choice to bear the social cost of pollution – and imposing a tax on the polluters from outside can scare the jobs away towards an economy with lower standards.

Moreover, any environmental standards imposed by the government suffer from the problem of being extraneous to demand. Given that their customers are not actually demanding reduction, polluters might find it cheaper to reduce their output of pollution, or to support candidates for public office willing to lower the standards. What the government gives, the government can take away, and if a green tax causes job loss, the resulting backlash from the newly unemployed might cause the government to repeal it.

⁹⁸ Arthur Pigou (1920) *The Economics of Welfare*, available online at <http://www.econlib.org/library/NPDBooks/Pigou/pgEW.html>

Because of this, in the last two decades, Pigovian tax schemes have been making an increased use of the market in an attempt to affirm their legitimacy and the business community's perception of their stability.

A typical scheme has been the "pollution futures" market described above, but with standards of permitted pollution, which the seller of pollution credit has to beat, set by government fiat. It is just about the only incarnation in which emissions trading currently exists, though libertarians would argue that their proposed trading system, based on property rights and freely evolving markets, would, if it were ever implemented, be more efficient and less distorting. In the currently existing system, the government usually decides on a scheme where the permissible quotas slowly decrease from year to year according to a pre-announced scheme, giving the emitting firms sufficient time to adjust to the transition through trading through trading quotas; an alternative scheme of similar effect would be a staggered increase in the price of a single pollution quota, raising the price of emitting and giving the firms added incentive to reduce their pollution today in order to capitalize on the increased price of pollution credits tomorrow.

The government typically sets a standard for pollution that is equal across the area being regulated, since that creates a stable market and prevents fluctuations that would result if emissions standards were allowed to vary from region to region in accord with the local demand for clear air. Such independent agents as university professors or environmental activists, who value their reputations more than they would value any reasonable amount of graft, supervise the trading and make sure that emitting firms have pollution licenses or contracts that are greater than, or equal to their level of emissions. Another alternative involves a private auditing firm operating under contract from the government.

Those firms that fail to meet the standard themselves or to buy credits for doing so from non-polluting firms, are either fined by the market's government supervisors, or placed in a higher tax bracket. This punishment imposed by the state rather than the market makes this type of emissions trading a species of Pigovian taxation, though a much-modified species.

Another modification of the old Pigovian tax scheme has been a proposed re-haul of the tax system that compensates an increase in taxes on polluting activities with a

decrease in (or, in some proposals, the abolition of) taxes on income and capital gains. Under such circumstances, taxation would be less an instrument of generating revenue and more a means of discouraging economic choices that promise profit in the short term and severe damage or destruction in the long. This approach, claim the proposal's advocates, would truly maximize the Pigovian efficiency of the taxation system, since only undesirable activities would be discouraged through taxing them.

The libertarian critics of government intervention often point out the real problem in environmental economics lies less with the allocative efficiency of a market than with the interpersonal conflict between persons who advocate different fates, or uses for the natural world. If the market was at perfect Pareto efficiency, argue these critics, it would be irrelevant to each individual selfish actor, who would seek their own private satisfaction, not the well-being of a hypothetical "society". Because of this, argue the Hayekians, the only solution which resolves environmental conflicts and brings about a result satisfactory to all involved parties is one based on property rights and free bargaining on their basis.

In addition, say these critics, it is impossible for the any central agency to even know whether allocative efficiency has been reached. According to Hayekians, the information describing a complex economy is so spread out between the various agents acting in it, and so dependent on specialized knowledge, unique contexts, long-time personal experience with particular markets or customers, or just on knowledge perceived intuitively and without clearly communicable formulas, that these millions of economic agents will simply find themselves unable to communicate it to any central authority. Thus any centralized attempt to tell how far the economy is from Pareto efficiency and what should be done to reach it will necessarily be a gross over-simplification, almost certainly imposing more social costs than it corrects by the simple law of probability.

In the end, since an objective standard of reaching Pareto efficiency is, according to Hayekians, impossible in principle, a government attempting Pigovian measures will find itself pulled back and forth by special interest groups each seeking their own advantage in the name of high-sounding slogans. It is needless to say that, if Hayekian arguments are reflect the truth accurately, once such a government begins to interfere in the market, it will keep on interfering, imposing not a simple social cost, but a social cost

that keeps on compounding itself as new lobby groups seek to influence the central policy for their own benefit.

The critique of libertarianism based on the perceived inadequacy of property rights in reining back slowly-accumulating pollution is answered by the Hayekians with the assertion that even though a policy of liberated markets, lowered transaction costs, and strongly enforced property rights may not be perfectly developed right now, it is a better choice than the endless accumulation of mismanagement that results from a government interference in market processes. In addition, they say, property rights are not the only market mechanism driving for pollution reduction. As has been mentioned before, the overproduction of pollution goes hand in hand with the overproduction of material goods and services, which produces an economic surplus, which the newly wealthy society is now more willing to spend on quality-of-life issues such as clean air and water, or the preservation of wilderness ecosystems. Given a choice, people become a great deal more willing to pay for ecologically clean products, while businesses that rely on less wasteful production can enjoy a greater efficiency of resources. The advantage of polluting businesses that make use of externalities such as the atmosphere lies in free waste disposal, but businesses that do not produce waste do not have to dispose of it – and also enjoy more output per unit of resource input. These factors combine to drive a replacement of wasteful and polluting processes with cheaper, more efficient, and cleaner ones – note the absence of gas lighting in modern cities.

In any event, the Economic Rationalist advocates of intervention would agree with the libertarians that questions of environmental policy would be much easier to answer when property rights are clearly defined and transaction costs kept low. Perhaps as economic science develops, and Economic Rationalist solutions gain greater prominence in environmental policy, the two points of view will converge towards a sort of pragmatism that accepts government intervention through tax favors or penalties, but only when it is obvious that the transaction costs of a negotiation-based solution are not yet surmountable by the unaided free market, and only in such a way that it leads to the development of free-market-based resources to solve this problem in the end.

Eco-Capitalism: Hayek and Coase Meet Muir and Carson

Modern eco-capitalism is a philosophy that evolves out of the Economic Rationalist discourse as a plan of action to bring market capitalism on the next step in its evolution. It is, essentially, an outgrowth of the beliefs of Smith, Ricardo, Marx and Schumpeter that one of the distinguishing characteristics of true capitalism is an active multiplication of the resources capitalism uses to function. In a capitalist system, the simple operation of the never-ending competition cycle drives individual entrepreneurs to new heights of ingenuity and capability, destroying old ways of doing things and replacing them with improvements in an unflagging race of creative destruction. To stay competitive, a capitalist strives to increase the productivity of any given operation, not only in terms of the sheer bulk of capital but also in the sense of this capital's versatility, of the amount of new capital that a given unit of capital can generate, and of the total output of goods and services that a single cycle of buying, processing and selling makes available to society.

According to an eco-capitalist, all forms of capital have their ultimate origin in ecological capital – ecosystems which make it possible for the capitalist to operate⁹⁹. All the other resources that the capitalist relies on, whether grown, extracted, manufactured, or, in the case of human resources, trained, must first be made possible by the existence of a stable ecology. Moreover, this ecology itself produces a self-renewing ecological yield – for example for the Neolithic humans it was different species of wild grasses that could be domesticated into cereal crops, and for the modern biotechnologists it is the genetic variety of a modern rain forest that can produce trillions of dollars in marketable pharmaceuticals.

The capitalist who recognizes this natural capital as the greater set of which such things as metal ores, oil and timber are mere subsets, would seek to make ecosystems healthier and more robust in order to maximize their ecological yield. Thus the intermediate goal of any capitalist whose ultimate goal is the bottom line should be the improvement of the planet's ecological health, on the premise that people whose soil is

⁹⁹ Hunter Lovins and Walter Links (2002) *Insurmountable Opportunities? Steps and Barriers to Sustainable Development*, available online at www.rmi.org

not eroded, whose biodiversity is not exhausted, who are not constantly sick from toxic compound in their water supply and who have green parks and lodges in the country to play around in would be able both to produce and to buy more things of value.

For example, an eco-capitalist would not chop down an old-growth forest – he or she would develop a process whereby wood products that needed old growth timber before could be made from wood pulp, obtainable from wood that can be harvested from an ordinary timber plantation. The old-growth forest could be a “merit good” whose very presence nearby would raise the value of campsites, hunting preserves, luxury resorts, horseback riding stables, canoe rental outfits, the sales in a camping-goods store, the sales of a photography supplies store, or even the value of rooms to rent in a nearby town (compare a room with a view of an old-growth forest that explodes with the colors of New England foliage every fall to a room with a view of a denuded field full of stumps!) Thus anybody who owns a stretch of old-growth forest could leave it standing and make more money building a resort hotel nearby, investing in a canoe rental business on the nearby river, or even a ski slope on a nearby mountain (compare the number of customers that a ski resort can attract if the resort is next to several mountains whose lower slopes are covered by majestic old growth evergreens as opposed to a similar resort that overlooks a barren clear-cut vista!)

Similar reasoning would apply to fish stocks – allow the stocks to recover, in the meantime invest in ecologically safe aquaculture. When the wild stocks finally do recover, we should harvest them sustainably and then market “genuine, wild-caught fish” as a luxury good. This would make a lot more money than the current desperate struggle to support an overcapitalized fishing industry when thirty fishing crews up to their ears in debt chase a single swordfish in an ever-widening circle.

Eco-capitalists also have their own discourse on the internalization of externalities. While they do recognize that to a large extent, internalizations through property rights and negotiations between interested parties based on Coase’s theorem, are possible, they have also elucidated an additional mechanism for internalization, founded on the premise that an externality that makes it profitable for a firm to pollute also lulls that firm into inactivity with regard to possible improvements in efficiency. The pressure of competition on the firm is reduced by the presence of the externality; rather than

developing more efficient ways to utilize resources, the firm now seeks to squeeze the largest possible profit margin from its current method of operation.

This stagnation lasts as long as the firm enjoys a dominant position in the market due to its position of market incumbency, but any firm seeking to enter the market – and they will, since the stagnation of the incumbent, externality-using firms will eventually lead demand to outstrip supply – will need to use something new to negate the advantage of the established behemoths. This something else is likely to be a new, technologically superior productive method, which no longer needs to make use of this particular externality thanks to the technological advances made in other, more competitive sectors and applied by the newcomer firm to the sector it is entering. Using such a method, the newcomer, free from dependence on this particular externality, quickly out-competes the polluter, simultaneously making the externality irrelevant.

As an example, let us consider a power plant that continues to depend on old and inefficient coal-fired steam turbines while other plants develop modern ultra-fast gas turbines will get away with doing so for a while, taking advantage of the cheapness of coal and the atmosphere as a free waste disposal system. But it can do so only in conditions of regional monopoly, when its management knows that the customers cannot get their electricity anywhere else. The customers of this power plant are not stupid, they can read, and they know very well that even if the power plant is not paying the price for its use of the atmosphere as a free dump, they are paying these prices, through the damage that the externality does to their health and the potential damage to the climate of the Earth.

Since they still want electricity, but do not want the social cost associated with it, they will look to entrepreneurs that specifically focus their ingenuity to making electricity which is just as cheap, but passes less social cost down to the consumer. In other words, the power plant using the externality becomes a target, attracting entrepreneurs, and venture capital investments, who dream of seizing its market share by doing its job better. Because of this, even if the coal-fired plant won't do it, money will still be invested in cleaner and more efficient methods of generation, since firms that do so will be rewarded by good PR among their customers and lower expenses on physical capital (since a smaller and efficient power plant is cheaper to build than a mammoth one.)

As time goes by and the society's demand for electricity continues to increase, the company that builds a power plant faster and cheaper, and manages to get a larger output from a smaller footprint, will have a significant advantage in obtaining credit, not to mention in its negotiations with nearby property owners over siting concerns. In addition, as regional monopolies become a thing of the past, utilities that used to have the grid optimized for their own transmission needs would find themselves on a new, transformed grid where every newcomer can pay a fee and transmit electric power. This will essentially pass the costs of re-optimizing the grid with the addition of every new supplier down to the old behemoths, putting their credit rating at an additional disadvantage. All of these factors together would combine to give modern and efficient generators an advantage in competition with the giants, even though the fuel they would use would start out more expensive than coal.

As demand for non-polluting generating technology increases, chemical engineering techniques, such as coal gasification, will evolve and grow cheaper, until the extra cost associated with making fuel gas out of coal is brought below the price of moving high volumes of coal through warehouses and railway junctions in order to feed it into the coal-fired plant. At that point, coal-derived gas fuel will be cheaper at the point of use than bulk coal, allowing the modern plants, which are already superior to the coal-fired plants in the amount of physical capital necessary to build it, to surpass the coal-firing steam turbines, or at least compete with them, with regard to operating costs. This will enable the cleaner and more efficient plant to offer electric power at cheaper rates than the plant with the antiquated steam turbines, making the older plant not merely obsolete but also noncompetitive.

According to an eco-capitalist, an externality harms the public in the short term, but because it relieves the pressure of prices on a sector, it removes whichever enterprises take advantage of it from the cycle of creative destruction, and allows other enterprises, which seek to satisfy the public demand to have the good or service but avoid its social cost, to out-compete it long-term and put it out of business. Thus, as the pace of technological change accelerates from decade to decade, a rational egotist of the sort postulated by a typical economic reductionist scholar will have less and less incentive to discount the long-term and more incentive to invest in the future, becoming a steward

rather than a user¹⁰⁰.

This philosophy has only been articulated in specific terms after Dryzek published his book, and he does not discuss it. He does, however, provide an example of a spectacular failure to recognize it, present in the section on Democratic Pragmatism. An environmental philosopher named Mark Sagoff argues that people have separate preferences as citizens and as consumers, using his arguments as a supposedly “devastating” critique of the economist approach to environmental policy¹⁰¹.

Sagoff bases his analysis on a poll he conducted among his students with regard to the Walt Disney Corporation’s bid to build a skiing resort in the Mineral King Valley of California’s Sierra Nevadas. The students revealed that they would not want the existing Mineral King Wilderness to be developed into a resort, but that if the resort was in fact built, they fully intended to enjoy the skiing and wildlife available. Few students showed an interest in backpacking through the wilderness as it now was. Sagoff uses this poll as an argument that our preferences as consumers take no account of what we ourselves want as citizens, and thus do not reflect in any economic considerations regarding the environment¹⁰².

Of course what Sagoff’s results really show is that human beings, who are, amazingly enough, the same human people whether their current role is that of consumers or of citizens, prefer a ski resort and a wilderness – and, all other things being equal, would prefer a ski resort with wild woods around it to one that has obviously destroyed a wild piece of nature. In other words, if a resort is built anywhere in a region, it is more profitable for that resort to keep the surrounding woods from further development, and to restore ecosystems nearby from whatever damage they have suffered. Such a resort would attract more customers, not just by means of the positive PR its actions would generate, but simply by having a better view from its ski slopes.

Besides these immediate benefits, by having living woods nearby, the resort can

¹⁰⁰ Hunter and Amory Lovens (2001) *Natural Capitalism: The Path to Sustainability?*, available online at www.rmi.org

¹⁰¹ Dryzek (1997) page 95.

¹⁰² Mark Sagoff (1988) *The Economy of the Earth*, Cambridge University Press, Cambridge, UK.

capitalize on whatever profits it can get from backpackers, licensed hunters, birdwatchers, cross-country skiers and horseback riders in the border areas, and many other recreational opportunities, allowing this resort to serve a wider market and attract groups such as retirees, who might not be interested in skiing, but still represent a substantial chunk of disposable income to swell the hotel's bottom line. As resorts across the nation become aware of these economic possibilities, a smart property owner is likely to make more money selling a plot of forested land to a nearby resort than to a timber company – after all, the timber company can always cut timber from a tree plantation, or substitute genuine old-growth timber with an ingenious method of processing wood pulp, while living wilderness is a resource which, once destroyed, cannot be substituted.

The main proponents of eco-capitalism are Paul Hawken¹⁰³, Amory and Hunter Lovins¹⁰⁴, although some of its arguments are known in works by Robert Costanza¹⁰⁵ and Herman Daly¹⁰⁶. Besides Economic Rationalism it is also very important to the Ecological Modernizer discourse.

Ontology, Relationships, Actors and Metaphors

The Economic Rationalist does not share the belief of the two previous discourses regarding the necessity, or indeed the long-term possibility, of social restraint upon the operations of the market. To an Economic Rationalist, while individuals may decide to change their personal actions, the actions of many people in the aggregate are changed by the economic cost-benefit differences of various courses of development, measurable in dollars. It is not, as critics of this discourse sometimes allege, a matter of people being

¹⁰³ <http://www.paulhawken.com/>. See also: Paul Hawkins and Amory Lovins (1999) *Natural Capitalism*, Little Brown and Co, New York, NY.

¹⁰⁴ www.rmi.org. See also: Amory Lovins, Hunter Lovins, Earnst von Weizacker (1997) *Factor Four. Doubling Wealth - Halving Resource Use*, Earthscan Publications Ltd, London, UK.

¹⁰⁵ Robert Costanza, ed. (1991) *Ecological Economics*, Columbia University Press, New York, NY. See also www.wikipedia.org, entry for “Natural Capital”.

¹⁰⁶ Herman Daly and Edward Elgar (1999) *Ecological Economic and the Ecology of Economic: Essays in Criticism*, Edward Elgar Pub., Northampton, MA.

selfish robots following the option of greatest monetary gain and ignoring any benefit that is not expressed in dollars and cents. Rather this discourse describes all choices, whether exalted or quotidian, self-centered or filled with a transcendent passion, as needing to affect the real world, and in this real world, it is impossible to act outside of a cost-benefit analysis provided by economics.

Adherents of Economic Rationalism are convinced that information on which people act in making any particular choice is brought to them by multiple signals conveyed through an intricate network of supply-and-demand relationships, and made concrete in the form of prices. So even in deciding to make any choice at all, the agents depend on these prices to form their sense of priorities. A First Worlder has different priorities than a resident of the Third World; an unemployed single mother has a different set of priorities than an employed and married manual laborer, who has a different hierarchy of priorities than a single college graduate with a trust fund. All of these have other goals besides their material needs: even in the Nazi concentration camps, people were often motivated by compassion and love of beauty while life remained. But it is much harder to make a priority of higher purposes when in a concentration camp, or on Skid Row, or simply faced with three mortgage payments and the sudden need to care for an ill child.

In making choices, since the making of these choices, whether with regard to the environment or to anything else, implies management of material resources, any choice an a person might make based on convictions, desires, or preferences with regard to non-monetary priorities, is limited by the availability of these material resources, which is signaled to them through prices. Anyone who makes choices that have no regard for prices thereby transfers control of whatever resources that agent once controlled to other agents, decreasing his or her influence and increasing theirs. Thus, even people with spiritual yearnings need to look at the price tags when contemplating action -- if they are not to limit themselves to dreams and moonshine. Most people's activity consists of months or years spent doing what they must so that they can set aside as much time as they can arrange to do what they want. Even for people who love what they do for a living, there is always the threat that their circumstances might change and they would find themselves doing what they must to get by – and once again these circumstances

change in response to economic signals.

As the costs outweigh the benefits, more individuals, on average, turn away from a certain course, and as the benefits of another course are demonstrated, more individuals, on average, participate in it and support it.

It is important to keep in mind that according to the Economic Rationalist, these changes in market demand cannot be circumvented by policy decisions: any policy decision, regarding electric power or anything else, which seeks to force people to act against their own economic benefit, will simply be circumvented by new patterns of economic activity. The people may not even wish to do so – if we all went insane tomorrow and decided to outlaw gasoline, we might still love endangered species, but we would soon find ourselves raiding the zoo to butcher us some panda in the starvation and social collapse that would follow. If we chose starvation instead, this would mean leaving those who prefer butchering pandas to inherit the Earth. For a more realistic example, a strict emissions law will simply force emitters who, after all, have a living to make, to set up shop across the state lines, where they will pollute just as much, until the loss of jobs associated with that will cause a backlash and cause the people of the first state to repeal their tough emissions standard¹⁰⁷.

On the other hand, the Economic Rationalists believe that the market itself generates solutions to any problem affecting its participants. Even though many Economic Rationalists do recognize a role for the state and its policies in shaping this market, they concede that the state should limit its role through processes that use supply and demand signals and achieve the desired ends by making them profitable. The market is so highly regarded not because anyone involved in it is necessarily civic-minded but because in the ideal state, or a state close to the ideal, the market is fair – no one is allowed to get anything without giving back – responsive to changes in demand, and because its operations multiply resources available for any project rather than spend them. As long as the people themselves realize that something is a problem, the market will reward anybody who creates a solution, and thus resources will be devoted to such a

¹⁰⁷ Dryzek (1997), page 12

solution – whether the solution is technological, financial, social, or any other.

If the markets do not account for something (like, say, carbon emissions) in their price signaling, that is not, in itself, a problem. Firstly, the price signaling does account for factors correlated with the externality (like, say, plant inefficiency), and reducing the second will reduce the first. And secondly, as long as the people realize an externality exists, it will be internalized simply by the fact that someone will produce a solution to meet the unfulfilled demand of the people for the product without the imposed social cost. This last example is illustrated by the increasing market for hybrid cars, which emerged as soon as people realized that pollution can be solved by a new type of engine.

If the market contains the information necessary to allocate resources optimally, and if that information generates answers as soon as demand reaches sufficiently strong levels, it would follow that any attempt to alter the signals of the market by decree, forcing people to buy and sell as they do not wish to, would distort that information and cause a sub-optimal allocation of resources – in other words, waste, inefficiency, and quite possibly additional damage to whatever the distortion is supposed to protect. While it is possible for society to shape active policy within the bounds of the Economic Rationalist discourse, this policy should seek not to do something the market attempts to resist, but to use market laws, internalize externalities, make the market more reflective of the wider world and more like the ideal free market that has never existed outside of books. Then the market will reflect whatever other problems afflict society and spontaneously allocate resources in a pattern that is optimal to its favorable resolution.

Assumptions implicit in this discourse include a belief, shared with the Democratic Pragmatist, that the ultimate power to make social changes is distributed among individuals and cannot be integrated into the upper levels of a hierarchy. The disagreement lies in the Democratic Pragmatist's belief that this power depends only on the desire for change on the part of the grassroots, while the Economic Rationalist believes that the change must fuel its own instantiation by assuming an economically profitable form.

The chief entities Economic Rationalism Recognizes are consumers and

producers, or aggregations thereof known as firms, and described by Coase¹⁰⁸ as engines for reducing transaction costs of economic interaction. This is done by taking the many individuals that comprise a firm and treating their goals as, for some purposes identical; for those purposes, the firms “act as individuals”¹⁰⁹. Markets, prices, property and resources are recognized in the discourse anthology, with capital being recognized as a separate entity from resources: resources are available independently of the actions of a capitalist, but capital must be generated through economic action. The blurring of the distinction between capital and resources constitutes the distinctive feature of eco-capitalism. As an ontological construct, these resources may be limited by the total capacity of the planet to supply this resource, or it could depend only on the ingenuity of entrepreneurs, who develop substitutes for any resource that grows scarce as soon as the prices justify doing so; the discourse is split between these two schools of thought¹¹⁰.

The government is also recognized to exist, but its nature in the discourse is dual. On the other hand, the existence of government is perceived as necessary to the enforcement of property rights and the “internalization” of the externality which consists of the advantage possessed during business negotiations by an agent who had previously invested in the form of capital known as a firearm. On the other, the government is perceived as, in Dryzek’s words, a “rational egotist”¹¹¹ seeking power at the expense of the productive forces of society. The bureaucrats and legislators which comprise the government seek to dominate the economic landscape through a sort of hostile takeover; moreover, since the government is charged by the society with making, or at least

¹⁰⁸ Ronald Coase (1937) “*The Nature of the Firm*”, available at <http://people.bu.edu/vaguirre/courses/bu332>

¹⁰⁹ Dryzek (1997) page 112

¹¹⁰ Those Ecobomic Rationalists who do not believe in the limits imposed by Earth’s capacity largely overlap with a discourse Dryzek calls Promethean (pp.45-57). The difference between the Prometheans and the Economic Rationalists lies in the fact that Economic Rationalists recognize that environmental problems exist, and that the degradation of the environment is proceeding and must be halted. They merely choose a way of doing so that relies on the markets and not on the government.

¹¹¹ Dryzek (1997) page 113. He uses the words “An assemblage of rational egotists out to plunder the public purse.”

enforcing the rules, as rational egotists desiring to maximize their control, they cannot resist changing these rules to suit them better. This naturally implies that it is best for the government to be open and transparent, to minimize the damage it could do: thus economic liberty is usually accompanied by a social pressure for greater liberty in other areas, and more responsiveness of the state to the business interests. If the society has a large middle class, this is translated as responsiveness of the state to the people. If the society is already democratic, the discourse assigns its advocates the role of democracy's guardians.

With regard to the environment, the discourse's position is currently evolving. Dryzek writes that "at most, the environment is only a pathway for some human decisions to have effects on other people – for example through pollution", and also: "There is no such thing as wilderness, only wilderness experiences (that is, human perceptions of wilderness amenity.)" This is not necessarily true in modern eco-capitalism, where ecosystems are seen as the source of "natural capital" which provides a context that makes other forms of capital as valuable as it is. This natural capital is produced by "ecological yield", which, while it is certainly experienced by humans and in turn affected by their activity, results from ecological processes which the humans can influence, but which do not center on them. Thus Dryzek's statement of "wilderness experiences" needs to be corrected in light of recent developments¹¹².

Relationships in Economic Rationalism, at least according to Dryzek, are basically competitive. "The sort of cooperative problem solving sought by democratic pragmatists is ruled out." How a man who claims to have read Hayek can say that is difficult to guess. Suffice it to say that although free markets presuppose competition, in seeking ways to out compete one opponent, the firm builds a network of cooperation that can include a hundred others. In a modern market actions of competing and cooperating are tied so inextricably together that they really constitute as natural a pair as inhaling and exhaling. Dryzek must be confused by the fact that whether a firm is competing or cooperating with another, it is still seeking profit, which sometimes causes a resentment

¹¹² www.wikipedia.org, see entries for "Natural Capital", and "Ecological Yield"

of the firm's egotistic motive by those who do not approve of the Economic Rationalist discourse. But while the firm is indeed mostly driven by self-interest, this self-interest can just as well drive it to work together with a potential competitor to fulfill a contract as to work against its former ally in trying to beat the other firm to one. The object is not necessarily to force the other firm out of the market as it is to maximize profits, which could be done in whichever way the occasion warrants. It must be remembered that in a cutthroat market struggle, a firm is always better off with another ally no matter how many it already has. Thus it actively seeks to establish itself in a support network, helping other firms where it would pay to do so. The more intense the competition is, the more allies a firm must seek in order to triumph over common challenges, and therefore the more it cooperates. As has been stated before, the two relationships are inseparable in the context of modern business practice.

Another relationship which the Economic Rationalist implicitly acknowledges is the hierarchy of experts. There is a difference, however, in the relationship of an individual agent with this hierarchy. In Administrative Rationalism, the expert is part of a hierarchy formed explicitly to fulfill a certain task, with each expert assigned a specific niche within which he or she must work. An economic rationalist would rather see the expert as the supplier of two useful commodities – specific skills and specific knowledge. The hierarchy is therefore much more fluid, with experts always shifting positions within it.

The experts working for the government constitute an exception, since they need to have sufficient grasp of both economics and environmental science to design a policy which uses the market laws with the best results to make pollution unprofitable and stewardship attractive. Dryzek says that the Economic Rationalist's distrust for the government implies that these experts cannot also be economic actors, but this is not necessarily true – environmental scientists can be in the business of providing fair expertise, which is a vital commodity without which institutions like the pollution futures market, or a mediation board solving property rights disputes, simply cannot function. The reputation of such an expert would be of far greater worth to him or her than any practical amount of graft a potential briber can offer, because unless the expert is trusted by every side, his or her position is worthless. Because of this, experts do not necessarily

have to be viewed as a sort of unworldly mystic motivated by nothing but the public good – the expert can be just as much of a rational egotist economic agent as those who make use of his or her expertise. The difference is that the expert’s business necessarily depends on a reputation for honesty.

Another hierarchical relationship Dryzek recognizes within the discourse is the hierarchy between humans and the natural environment: Economic Rationalism, he writes, is “thoroughly anthropocentric”. This is true enough, since even eco-capitalists argue that humans should treat nature with respect because they would make more profit doing so. On the other hand, Economic Rationalism does not preclude measures to safeguard nature for its own sake. The concern rather lies with the ability of society to afford it, and the only thing the discourse asserts on this subject is that the society will be wealthier, and therefore better able to afford the protection of nature, if policy does not interfere with the inherent tendency of the market to maximize the generation of wealth.

Economic Rationalism in Practice

The most significant influence of Economic Rationalists on policy decisions regarding the environment has been on incentives given to businesses in order to encourage greener operations. Pigovian taxes on pollution have proven popular in Europe, while the idea of emissions trading has found staunch adherents in many policymakers on both sides of the Atlantic. In Britain, “green taxation” found a surprise fan in Margaret Thatcher, whose pro-market values administration coincided with a great surge in environmental concern throughout the British society¹¹³. In 1989, the British environmental economist David Pearce wrote *A Blueprint for a Green Economy*, a book which recommended the replacement of regulation with green taxes, and whose recommendations were further backed by an appendix to a 1990 government paper entitled *This Common Inheritance*. In 1992, the government announced that “There’ll be a general presumption in favor of economic instruments” when it came to restoring

¹¹³ Dryzek (1997) page 110.

Britain's air and water.

Unfortunately the goal of the British Treasury, which saw taxation in revenue-raising terms, clashed with the goal of the Department of the Environment, which saw the green taxes as an instrument of externality internalization. This caused considerable consternation on the part of the British business lobby, which feared an arbitrary set of green taxes, likely implemented in addition to the regulations, and prone to change without warning whenever the government felt it was not collecting enough revenue. As a result of this lobbying green taxes never really took off in Britain, making the whole situation a prime example of a clash between Administrative Rationalist and Economic Rationalist discourses.

In Continental Europe, Pigovian taxes are used most widely by the French, Netherlands, and German governments¹¹⁴. In the Netherlands, they have produced significant results and are widely applauded by the environmental lobby; the business community does not resent them because overall, Netherlands is known throughout Europe for its low rates of taxation, and the business lobby sees pro-environment Pigovian taxes as a small price to pay for a generally pro-business climate. This rare consensus between Green Romanticists, Ecological Modernizers, and Economic Rationalists has produced extraordinary achievement in both economic growth and environmental efficiency¹¹⁵.

The experience of France and Germany with Pigovian taxation has been less encouraging: Germany has simply added green taxes into an already existing framework of regulation, which certainly provides businesses with the incentive to avoid polluting the environment, but does not relieve them of the burden which Economic Rationalists see in government interference. Many businesses find themselves unable to marshal the resources they need to achieve the reduction in pollution which the state policy demands of them; as a result, Germany's environmental successes are falling short of its environmental-policy goals, and German economy is plagued by persistent

¹¹⁴ Dryzek (1997) page 111.

¹¹⁵ www.wikipedia.org entry for "Economy of the Netherlands".

unemployment of over 9% of the workforce, as compared to the unemployment figures of the Netherlands, which fluctuate between 2% and 6% of the workforce¹¹⁶. As a result, new green taxes are being increasingly opposed by the government¹¹⁷. The usual result of green tax proposals in practice has been for the central government to toss this hot potato to the discretion of local governments, which means that the regions whose economy depends on the presence of polluting industries the most are understandably reluctant to endanger jobs in their region any further by taxing the employers' investment capital away.

As for France, its green taxes have mostly been used by the state as a source of revenue, and the business community simply fails to feel any significant pressure from them, given the many other taxes to which the French government subjects them¹¹⁸.

After the Treaty of Maastricht established the modern form of the European Union in 1992, the new organization explored the option of a carbon tax for its members, levied per metric ton of fossil fuel burned, in accordance with commitments Europe undertook on the Rio de Janeiro environmental summit of that year. The measure was approved by the European Parliament on June 24th, 1998, breaking a deadlock in place since 1995¹¹⁹. The agreement that resolved the deadlock was essentially a decision to leave the specifics of that tax to individual states, although it was generally agreed that the new tax was to be laid specifically on carbon-based energy, and that the rate should be approximately 9% of the energy's market price. Subsequently the issue deteriorated into a still-ongoing debate concerning the percentages allocated to emissions by residential emitters, transportation, small businesses, heavy industry, agriculture, and so forth¹²⁰. Similar fate has befallen a proposed carbon tax proposed after the 1992 Rio

¹¹⁶ www.cia.org

¹¹⁷ <http://www.rprogress.org/programs/sustainableeconomy/seu/2002/1.6.htm#2>

¹¹⁸ Dryzek (1997) page 111. See also <http://capitalsocial.net>. According to www.nationmaster.org, the French tax burden "remains one of the highest in Europe". Understandably, the impact of one tax among many is small in such a situation.

¹¹⁹ <http://www.owl.net.rice.edu/~poli362/whitepaper.html>

¹²⁰ Jane Suiter (2004) "Carbon Tax to Fail EU's Test of Credibility" *The Times* of London, March

summit by the member nations of OECD.

Emissions credit trading has enjoyed a greater success. In 1990, the latest set of amendments to the United States' Clean Air act allowed emissions trading in sulfur dioxide, held by the Chicago Board of Trade in an auction form. Considering the rapid decline in sulfur oxides emissions experienced by the US economy since then, it appears that even with heavy government regulation. Emission trading has proven itself as productive in practice as it has been in theory. Unfortunately the proposed scheme of carbon emission credits trading has been deadlocked at the debate stage for over a decade, having fallen victim to ideological posturing in the tempestuous debate between the US right and left. Of course Europe, whose politics are not characterized by the US type of bipolar deadlock, has nevertheless remained stalled in its own carbon-trading debate, apparently mired in the sheer bureaucratic inertia that a proposal has to face before it negotiates its way through the maze of committees and interest groups entrenched in Brussels.

The international Kyoto Protocol, which took force for its signatory nations after being approved by Russia in 2004, has been touted as a success, but the exact mechanics by which the signatory nations will meet their protocol obligations remain up in the air; United States, though a signatory, has refused to ratify because of perceived unfairness in the assignment of emissions penalties, and although nations can trade carbon credits among themselves, the internal markets for carbon emissions are up to individual nations to establish, and it is far from certain that such markets can be established without bitter clashes of interest groups in most of the respective policymaking bodies. In addition, China, which is the second biggest single emitter of polluting gases after the United States (and first when sulfur oxides and nitrogen oxides are considered) is classified in the protocol as a “developing nation” and thus exempted from the required reductions for at least a decade.

In short, as Dryzek quotes from Robert W. Hahn, “charges and marketable

7th, 2004, available online at <http://www.timesonline.co.uk/article/0%2C%2C2095-1028311%2C00.html>

permits schemes... are rarely, if ever, introduced in their textbook form.”¹²¹

Although libertarian propositions involving privatization and property rights might seem to skeptics to be so many theoretical exercises of the “assume a spherical cow” variety, they have actually had a significant number of successes. In Britain, many streams, brooks and rivers are returning to a relatively unpolluted condition after a group called the Anglers Cooperative Association has pursued an aggressive policy of tort claims against discharging industries¹²². Dryzek describes them as “very zealous in bringing cases against polluters, and often very successful.”

Conversely, United States, which normally prides itself on protecting its residents’ economic liberty to a much greater extent than Europe and Britain do, has had remarkably little progress in this direction. Property rights in the US West have been hopelessly muddled up by the activities of the US Bureau of Reclamation, which has effectively nationalized a great deal of water rights in the western states: the water is delivered to farmers in the desert at prices significantly below market value, which means that water is not only being wasted by farmers growing crops completely unsuitable for the climate, but the government-financed projects for delivering that water to the farmers (and away from its accustomed cycle which sustained the ecosystems of the region) have left a trail of vanished streams, siltation behind storage and diversionary dams, and extensive salination which rendered vast stretches of Western lands totally useless for both farming and natural ecological activity. Of course the remediation of all these disasters provided the Bureau of Reclamation with a never-ending need for larger budgets, so from their point of view, it was far from a negative¹²³.

Those property rights that remain in private hands are held under a “use it or lose it” doctrine: the rights of the supposed owner to a portion of the stream flow are taken away if he or she fails to demonstrate that the water is being actively used, even if less water is actually needed. This obviously encourages a policy of waste and inefficiency

¹²¹ Dryzek (1997) page 111.

¹²² Dryzek (1997) page 107.

¹²³ Marc Reiser (1993) *Cadillac Desert: the American West and the Disappearing Water*, revised edition, Penguin Books, New York, NY.

from the private sector to compound the problems of the public.

It is instructive to note that none of these ecological problems would even exist if the farmers living in the US West only had to pay market prices for water rights, which would be the case if water rights were privatized and the water sold for whatever the market would bear. The owners of the rights would have clubbed together to survey the hydrographic profile of the region and make sure that water supplies were not exhausted, and the owners of the land rights would have sued them the moment they noticed signs of salination on their property. Thus the very ecological woes of the region serve as a strong argument in favor of property-rights-based solutions within the Economic Rationalist paradigm – or at least so claim the adherents of this discourse.

Unfortunately, given the prevailing discourse of government interference into the operations of private firms, those interested parties who could have forced a decline in the abuse of water and air streams by polluters through tort claims for an invasion of property rights, prefer to lobby for government action instead, so that sophisticated trading schemes through which companies might finance a reduction in their emission rates, such as those described above, are relegated to predetermined government mandated schemes of “emissions trading” which are constantly plagued by infighting between interest groups and bureaucratic power blocks, thus diluting the effectiveness of the trading through regulations that are often counterproductive.

In more encouraging news, eco-capitalism appears to be more than a passing trend. The public demands benefits provided by the industrial society without their costs: automobiles without accidents, cities without congestion and crime, a food processing industry without the negative health effects of junk food, and obviously modern consumer goods and services, including electric power, with no negative effects on climate, health, resources, or ecosystems caused by the current methods of their production. People with disposable income are not willing to give up SUVs or air conditioners in the summer, but they are more willing to buy those that generate less pollution and have a smaller effect on nature, all other things being equal – and as it happens, less polluting technologies are also less wasteful of resources, so they make economic sense too.

As the culture begins to grow wealthier, it stops attaching as much importance to

savings and begins to attach more to quality of life, which includes a clean environment; at that stage the members of this culture are often willing to pay more a premium to obtain ecologically clean goods. This has caused investors to see the internalization of environmental externalities as a sector worth investing in – as Ford has recently demonstrated in its decision to focus on cars that combine fuel efficiency with muscle¹²⁴. In modern venture capitalism, green is not just sexy, it is profitable. A popular neologism in modern high-tech circles is “Viridian Design”, an adjective describing a movement which lauds itself as a “deeper” version of “Green”¹²⁵. Basically these people are greens that seek to use consumerism of the modern industrial society for good and not for evil – their vision is that of a new high-tech sector whose products are not only environmentally friendly in themselves, but which encourage a deeper state of environmental awareness on the part of their user¹²⁶.

Businesses across the world are recognizing that it is possible to do well by doing good, and that nature, as a vital resource of irreplaceable complexity, is too valuable for a capital-aware firm to destroy through short-term profiteering from an externality. On the contrary, money is being spent today to preserve ecosystems in order to harvest the natural capital they generate to the benefit of both the firm and the ecosystem.

3.1.4 Ecological Modernizer

Classification

The Ecological Modernizer discourse stands in sharp contrast to the three discourses discussed here so far. Administrative Rationalism, Democratic Pragmatism, and Economic Rationalism are all classified by Dryzek under the larger discourse of Environmental Problem-Solving. They are all Reformist discourses (they do not wish to

¹²⁴ Daniel Gross (2005) *William Clay Ford Jr.; Not Your Grandfather's Ford*, available online at <http://slate.com/id/2116703/>

¹²⁵ Coined by SF author Bruce Sterling, but the concept is far from SF today – there are real engineers and designers working on such products.

¹²⁶ www.viridiandesign.org

break with the modern industrial paradigm, merely to change it so it would address environmental concerns as well) who espouse Prosaic solutions (they wish to address environmental concerns using policy approaches that have already been used in other arenas, whether these approaches emphasize the bureaucracy, the voting public, or the market.)

On the other hand, Ecological Modernism represents an Imaginative Reformist discourse: it still does not seek to depart from the basic mode of social and economic organization implicit in modern industrialism, but the changes it believes to be necessary are enacted through policies unlike those used in modern industrial society before. While some of these policies have a clear root in an ideology known as corporatism (as shall be shown in the section on Ecological Modernism's intellectual pedigree), when considered overall, Ecological Modernism shows an approach to reform and growth that is often completely contradictory to corporatist instincts and principles. In short, it seeks to change the basic paradigm of industrialism only a little, but to accomplish this change using a radical departure in the means governments have traditionally employed.

Intellectual Pedigree

As has been mentioned before, one strong root of Ecological Modernism lies in the corporatist discourse. This is clearly seen when we note that the nations that were the first to employ Ecologically Modernist policies are those where corporatism has been the most successful: Germany, Sweden, Japan, and partly the Netherlands. While many other nations have experimented with alternative solutions after the "implementation gap" between Administrative Rationalist policy and actual results became apparent, it is in the most corporatist of these that the Ecological Modernist discourse became dominant. So, if we are to make any progress in understanding Ecological Modernism, an excursion into corporatism is in order.

Corporatism in its original incarnation was intended to deal with the problem of class struggle, particularly with labor unrest. As the economic and social elites of nations recognized that this unrest represented a significant threat to their privilege, at the same time they also recognized that an attempt to repress it by force was doomed to be counter-

productive. At the same time, observing the societies where social mobility and economic freedom were both greater, these elites could not fail to recognize that such societies enjoyed prosperous economies, political power abroad, and that their social unrest was channeled into relatively benign channels. This last seemed most important to societies where socialism was looking increasingly attractive to the lower classes. In short, the elites wanted the benefits of democracy without the chaos, and the benefits of social stability without such bogeymen as independent labor unions running loose on the streets.

Corporatism eventually took shape as a state that enfolded every recognized stakeholder in the social drama to its bosom like a mother hen. A strong labor union usually existed, organized into hierarchies of skilled and unskilled, industrial and service, physical and sedentary labor. All labor organizations in the nation were strongly encouraged to belong to the hierarchy; the encouragement took different forms based on what the mores of the time would consider acceptable. Representatives from the labor hierarchy were regularly invited to meet with the business, industry, and political elite, particularly the leadership of every party in the government and the opposition. The political, industry, business and labor leaders would sit down and discuss how much of what each side was prepared to grant the others. The workers would usually receive a pension plan, health insurance and affordable housing, the business leaders would in turn receive freedom from concern over strikes and enough government contracts to prevent the need to let workers go in lean years, and the government would receive the knowledge that tomorrow won't bring with it a sudden crisis or conflict, a general strike or a demand for new elections. In this manner, no one gave away more than they could, and everyone could be certain of getting something in return.

Eventually the process came to include professionals such as lawyers and doctors, leaders of the nation's largest religious denomination, the rural landowners and/or smallholder class, and any other social group loud enough that the government decided that Lyndon Johnson's maxim about tents should be applied. This made the society more stable, more predictable, and less dependent on such untrustworthy novelties as elections – since whichever party was elected, to remain in power it would have to assume roughly the same obligations to the bankers, the farmers, the workers, the railroads, and so forth

as its predecessor in office.

There are obviously variations on this theme. The early corporatist states were fascist, like Mussolini's Italy, Japan after WWII emerged into a quiet police state where sometimes it seemed that only the good taste of the people involved prevented anything so crass as gulags and palace coups. On the other hand, corporatist Sweden evolved into a social democracy, where no government would dare to draft a bill without giving the radical feminist lobby, or the animal rights groups, a chance to debate any parts they might find objectionable. The European corporatist states saw a consensus with the labor unions as a necessity of good government, while Japan included just about every major business clique, from financiers to construction firms in its decision-making, but left the workers out in the cold. But these were details. Overall, the discourse of corporatism was clear: consensus and stability above all, stakeholders summoned to work with the government in working out a plan acceptable to all, and the deals to determine who would give and get what to be made before the electoral campaigns even begin.

And of course there was the central authority of the public servant supporting the whole construction, serving as a guarantor of good faith between the stakeholders and making sure no one demanded any concession too staggering for the consensus to support. While no stakeholder was barred from contributing to policy and making a demand for concessions, it was made clear to all participants that the goodies were to be distributed by the government, and while asking for what is obviously a fair share would usually result in the request being granted, demanding more than what you are entitled to would be an excellent way for all the other stakeholders to join forces against you.

It is needless to say that when vocal and determined environmentalist movements appeared in nations organized on the corporatist model, the state, optimized for economic growth and a consensus income distribution, met their demands with fear and hostility: the consensus that the state had worked so hard to establish might now be disrupted by these socially irresponsible youngsters! Dryzek says that in corporatist West Germany, "environmentalists long battled a seemingly unyielding corporate state"¹²⁷. In Japan the

¹²⁷ Dryzek (1997) page 141.

situation was little better, as witness the government's efforts to hush up the Minamata mercury poisoning outbreak¹²⁸. But as the environmentalists, and the issues that brought up, steadily refused to go away, and as the effects of pollution upon health and quality of life grew increasingly obvious to the population of these nations, it became clear to the policy-makers that the environmentalists were a stakeholder group like any other, and if stability-threatening scandals were to be avoided, they needed to be brought in on the consensus-making. This was not Ecological Modernism yet, but it was a necessary precursor.

At about this time, the “implementation gap” between Administrative Rationalist regulation of pollution sources and the actual release of pollution into the environment started becoming obvious. In a corporatist society, getting the industry to participate in its own control was the natural solution, but, as in the case of the labor disputes, something needed to be offered to the industry in return if the cooperation was to become more than just a hollow façade for external imposition of hated regulations. As policy-makers were studying this problem, the solution became clear to them. Industry could be offered the chance to grow unimpeded if the industrialists undertook to reform their operations so as not to produce waste in the first place! This conceptual shift was of extreme importance: not only did it shift the emphasis of control from “out-of-pipe” to “into-the-pipe” from emission to production of waste, but it also hit on the realization that industries could not merely be permitted to continue growing if they stopped producing waste – they could grow faster and better by not wasting their resources on waste generation!

Naturally this opened up possibilities. It appeared that, properly defined, ecological measures would actually drive growth forward at increased rates, leaving behind only greener woods, clearer water and bluer skies – not to mention employed workforces and cheaper consumer prices. Corporatist policy makers were going beyond simply offering industry an incentive to satisfy the environmentalists: they were

¹²⁸ Timothy S. George (2001). *Minamata: Pollution and the Struggle for Democracy in Postwar Japan*. Harvard University Press, Cambridge, MA

discovering a way to beat such problems as unemployment and inflation, which were already emerging as a serious concern at least in West Germany. At this point, some of the former adherents of corporatism abandoned it altogether. Instead of advocating a discourse that sought stability and predictability, they came to value change – a restructuring of the entire economy on still industrial-capitalist, but now ecologically sound lines¹²⁹.

The new discourse inherited the concept of consensus-building, and the emphasis on distributing concessions to satisfy each shareholder, from the corporatist discourse. It also inherited a belief in the guiding role of the central government from the same source, but in Ecological Modernism, this trope underwent a metamorphosis. Rather than the government serving mostly as an honest arbiter and an enforcer of fairness – which it still does, to a degree – the Ecological Modernist government also served as a visionary. It reviewed environmental data and collected information from numerous branches of economic and scientific activity. Then its panels of experts would analyze the data as in Administrative Rationalism, but rather than issue regulations based upon their conclusions, they drafted detailed plans, for rationalization of production and elimination of waste and pollution -- plans to be implemented by every stakeholder working together, but mostly by the industry in whose hands money and professional skill still remained. The industry would make necessary changes in production and pricing, while the government, in exchange, would get off the industry's back and allowed free markets sufficient rein for the required transformation to happen flexibly and painlessly. Of course other stakeholders, not just the industry, would have to be satisfied which meant that the government could not leave off regulation altogether, but it would now regulate in an enlightened manner, appealing to the industry's self-interest to get the CEOs to cooperate and enacting only minimal restrictions on market operations. Or so the theory went¹³⁰.

¹²⁹ Martin Janicke (1985) *Preventive Environmental Policy as Ecological Modernization and Structural Policy*, Wissenschaftszentrum, Berlin, West Germany.

¹³⁰ Maarten A. Hajer (1995) *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process*, Oxford University Press, Oxford, UK

After Ecological Modernism established itself as the dominant discourse in such economical powerhouses as Germany and Japan and so came to global prominence, the main thinkers driving its further evolution have been Peter Christoff of Australia, Maarten A. Hajer of the Netherlands, and Ulrich Beck of Germany¹³¹.

Beck (1992) argues that Ecological Modernism represents the fulfillment of the original promise of modernization. Modernization, in Beck's opinion, means the use of rationality to improve the quality of human life – something that he argues was only half-done by the evolution of modern industrial society, making it not modern but rather “semi-modern”. The new society that Beck envisions will be a “risk society” which deals with environmental risks and uses rational planning to eliminate them the same way (argues Beck) that the industrial society in its “semi-modern” form has eliminated most class conflict. Beck envisions a replacement of the old hierarchies of semi-modern industrialism, including the hierarchy of experts and knowledge workers, with “networks that should cross over the traditional boundaries of the state, economy, and society.”¹³²

Hajer (1995), on the other hand, embraces the expertise that Beck rejects as “risk apology”. He argues that expertise is necessary for a “reflexive” process of ecological modernization, which would drive the evolution of institutions and policies based on the critical self-awareness of policy-makers – and in order to criticize their own actions intelligently, writes Hajer, constant monitoring of consequences is necessary. For this, the hierarchy of experts and knowledge workers is indispensable, though Hajer does concede that it should never be controlled by any one particular elite, social or political. Rather it should provide testimony that could be used either by defense or by prosecution as the elites are called upon to justify their actions before the scrutiny of the various stakeholders. The role of the expert is to provide information so that criticism can be applied in the light of reason. Hajer is indeed critical of the “mediocre naturalist environmentalism”, which fails the environment, he claims, because it refuses to present environmental questions in terms of real social and economic reform: since we still need

¹³¹ Dryzek (1997) pp. 147-150.

¹³² Dryzek (199), page 149.

modernity and economic growth, argues Hajer, the question should be “how should the stakeholders cooperate with the state (but not necessarily with the political elite of that state) in achieving it in the most environmentally benign manner?” In this sense, Beck falls short, since by portraying scientists and experts as the apologists of the inexcusable, willing to offer their knowledge to the highest bidder, he can offer nothing as an alternative but a stated need for some sort of alternative “network” of institutions to form, which Beck readily concedes he cannot describe and leaves it at that. Hajer does not describe his forum of reflexive inquiry in detail, but he does outline the traits that this forum must possess to be effective, and provides a prototype in the famous Berger Inquiry of the 1970’s, which examined a proposition to run an oil pipeline through the wilderness of Canada. His emphasis on the Berger Inquiry makes Hajer close in spirit with the Democratic Pragmatists as well as Ecological Modernizers.

Christoff (1996) argues that Ecological Modernism can exist in a “weak” and a “strong” form. Weak Ecological Modernism basically cedes decision-making to a technocratic/corporatist agglomeration of systems managers from the different interest groups: business, government, science, and so forth. These experts modify the activity of businesses and state institutions to cut down on waste and pollution and improve efficiency but they restrict these developments to the first world: in effect just those countries where the business and government elites are both sophisticated enough, and the system of scientific think-tanks and consultancy groups developed enough that this sort of close, voluntary cooperation is possible. The easiest way to do this, argues Christoff, would be to simply shift the polluting industries over to the developing nations, in the sense of corporatist Japan, which invests heavily in pollution control and sets land aside for endangered species habitats, and then allows its investors to go make Pacific islands over into golf resorts, or patronizes poacher timber companies that operate in the supposedly protected national forests of Indonesia. Christoff contrasts this type of thinking with “strong” Economic rationalism, which changes the economy in fundamental and radical ways so that rape of nature, either at home or abroad is not rewarded, and that allows non-technocratic solutions to emerge where appropriate, and does not insist upon the imposition of a uniform techno-corporatist framework on all societies that choose it.

Ontology, Relationships, Actors and Metaphors

An Ecological Modernizer believes that if a problem, such as excessive carbon emissions output, exists in a given society, it is because this society's entire mode of operation in the sector in question is organized inefficiently. The people participate in harmful activities because they fail to see the "big picture." This is reminiscent of the Administrative Rationalist in the emphasis on informed decision-making, but unlike the Administrative Rationalist, the Ecological Modernizer believes in changing the whole organization rather than merely using policy to optimize the working of the existing one.

The Ecological Modernizers are also not unlike the Democratic Pragmatists in that they have less faith in hierarchies of control, but they also have less faith in the grassroots level. Their ideal is to bring all interested parties together, so that the policy expert from above will have to receive information from the small business owner below, but once the operation of the sector is redesigned in accord with this new consensus, it is to be binding for all levels of society, and not a gradual "bottom-up" process that the Democratic Pragmatist believes in.

According to Dryzek, the ontology of Ecological Modernism recognizes systems, rather than conceptual atoms, as the basic entities of its ontology. The plans drafted by the government, approved by the stakeholders and implemented by industry have their foundation in systems theory, and no individual factor exists otherwise than as part of a system. In fact its interactions with the rest of the system and its role therein are what give this factor its individual identity; in this respect, Ecological Modernism is very Buddhist.

Dryzek says that "Ecological Modernism's embrace of the systems concept is incomplete, for it still can view natural systems in limited terms, as mere adjuncts to the human economy."¹³³ He continues: "Denied are any notions that nature might spring surprises on us, deny human management, have its own intrinsic value and its own open-

¹³³ Dryzek (1997) page 144.

ended developmental pathways.”¹³⁴ While Dryzek appears to be playing devil’s advocate and examining Ecological Modernism from the hypothetical point of view of a Green Romanticist, he still seems to be needlessly harsh. After all, if humans are part of the system, it is certainly permissible for them to see intrinsic value in their own pursuit of happiness, and according to the Ecological Modernist, the modern industrial society, for all its alleged flaws, still afford them the best chance of succeeding at this pursuit. Nature may very well have intrinsic value, but since the whole premise of the discourse lies in using what nature provides as part of a renewable cycle, the discourse seems to take more care than most in making sure that this value is not violated while still managing not to deny that human happiness has an intrinsic value as well. In that respect at least, Ecological Modernism is hardly a suitable target for opprobrium, unless the accuser believes (as Dryzek most likely does not) that the pursuit of human happiness apart from that achieved in communion with nature is in itself worthy of reproach.

Dryzek also points out that the concept of carrying-capacity limits on human economic growth is “not so much denied as ignored” in his Ecological Modernizer discourse. Since the Ecological Modernizers believe that pollution and resource depletion are both symptoms of inefficiency, and that an efficient capitalist economy generates more natural capital than it consumes, theoretically this means that the efficient sort of economic growth can go on forever, only making the environment healthier and more robust as economic growth removes more and more polluting inefficiencies.

This discourse recognizes the capitalist system among others, and promotes the advantages of competition in removing inefficiencies. On the other hand, the discourse is very statist: the government is recognized as the central hub connecting the economic system with the natural world through its superior knowledge and insight into the processes that goes on within the various systems. It is up to the state to recognize scientists and technological pioneers with valuable insights, to make the connection between different areas of knowledge or economic activity where discoveries and inventions can act in synergy with each other, to form comprehensive and holistic waste-

¹³⁴ Dryzek (1997), *ibid*

and-pollution reduction plans with input from all the stakeholder groups involved in the various separate issues, and finally to convince the private sector and all the other interested groups to cooperate as the plan is implemented.

Without the benevolent intervention of the state, it is presumed that potentially transformative information will never reach the people who could have used it best, that the various interest groups will never cooperate – at least not on the foundation of a grant transformative plan that recognizes their competing interests and reconciles them so that all sides may benefit – and that whatever change does occur will consist of piecemeal, haphazard, and inadequate measures that will fall short of the desired results even if the participants recognize the systemic nature of their task, simply because only the state can possess such a wide-reaching network of information channels and levers of influence, with such a critical mass of resources necessary to hire the experts and enforce the new rules against would-be cheaters and manipulators.

The natural relationship assumed by this discourse is one of mutually beneficial labor enlightened by benevolent guidance. Dryzek writes that the question of whether or not the relationship is characterized by hierarchy is an open one.¹³⁵ On the one hand, the answer appears to be positive, given the clearly dominant role of the state; on the other hand, the dominant role is based not upon an *a priori* assumption of superiority, but upon a consensus constructed among key players in the light of the information that the state provides them. Whatever the case might be in practice, the assumptions of the discourse explicitly reject the old Administrative Rationalist prescriptive hierarchy, although there are Ecological Modernizers who favor a hierarchy of systems managers over all other agents, independently of whether the systems manager is employed in the government, industry, or an activist think tank. Others assert that the entire premise of systems lies in the postulate that no one agent in the system can act independently of the others, and favor a more egalitarian relationship between stakeholders, with the systems managers providing the necessary information, but always being ready to modify their plan to address the concerns of a particular stakeholder group, so that the plan evolves as the

¹³⁵ Dryzek (1997) page 145.

consensus takes more and more points of view into account. The best way to describe this system would be as voluntarily hierarchical: everybody subordinates to the central authority not because they are made to do so, but because they are invited and offered a profit to share in.

A second assumed relationship is that between healthy environment and the economic prosperity of society, as well as of individual businesses in it. The recognized necessity of a clean environment for economic efficiency is what gives the central authority, typically the state, and its legitimacy in the plans it drafts, and the limits it imposes on the demands of a particular interest group. The group demands no more than what the state-promoted consensus is willing to grant it, because it perceives the existence of this consensus, and the reform plan it is promoting, as more necessary to its goals than any particular concession. The environmentalists focus on making the industrialists clean up their operations, while the industrialists focus on the profits cleaning up their operation will bring them, so that the two sides emphasize different aspects of the environment-economy relationship, but both see the need for a consensus between them if their particular goals are to be met. Thus, even though the concessions of the state to each group might be lower than the group might have wished, or made in areas other than the group might have liked, as long as all the groups involved believe that their goals of ecology and profit are tightly connected, and that the state's plan of reform will bring about a better state of both, they become more willing to tolerate what they perceive as inadequate concessions to themselves and excessive concessions granted to the other side. This is all worth it, they tell themselves, for the sake of a radical reduction in waste/pollution that the plan will generate.

The key agents in both relationships are stakeholders – businesses, governments, scientists, engineers, systems analysts and managers, and environmental activist groups. Their motivation is twofold: to make their concerns known to the consensus in order to include their concerns and goals in the continuing evolution of the main plan, and to benefit the public, including their former ideological opponents, by bringing about a reform that achieves the goals of all involved interest groups simultaneously. Their agency consists of working with the other agents in providing the input on which these reforms depend, but also of carrying out their part in the plan they finally approve, even if

some of these tasks involve the surrender of certain objectives for which they have struggled in the past. For example a car-maker might be forced to accept more stringent vehicle emissions standards in return for lower taxes, and an environmentalist group to abandon their opposition to genetic modification of crops in exchange for a more stringent environmental-impact code on real estate developers. In short, agents are not only out for themselves: they also work for the reform plan that the state develops and promotes, aware that it has come to be what it is today by addressing their concerns during the consensus sessions.

Among the key metaphors of this discourse is that of the tidy household. Just as our words for economy and ecology spring from the Greek root οἶκος, meaning household, the Ecological Modernizers use parallels from the quotidian experience of keeping a livable, tidy house, to advocate reforms that, in their opinion, will result in a clean, well-run planet Earth¹³⁶. A common laconic statement that purports to convey the essence of this discourse involves an assertion that we should not produce waste on a planet we live on, just as we do not excrete where we eat or go to bed. The metaphor is not particularly apt in a literal sense, since we do not have anywhere else to put the waste of our factories, while most houses do come equipped with highly specialized plumbing. The difference is one between disposing of waste properly and never making it to begin with. On the other hand, this metaphor is a powerful common-sense appeal to get our environmental affairs in order, since it is both a very strong and very succinct illustration of the absurdity of a polluting lifestyle, and an implied assertion that it is quite possible to live without messing our planet up with our presence. Moreover, it presents ecological reform as simple common sense rather than as a high-flown idealist wish list that ignores the necessities of daily living.

Another key Ecological Modernizer metaphor is closely tied to the “Modernizer” half of its tag, and that is the metaphor of social progress. Few people would object to capitalism today because a hundred or a hundred and fifty years ago it created such hellish conditions for the working class as we read about in the works of Dickens and

¹³⁶ Dryzek (1997) page 145.

Engels. We tell ourselves that that hell was merely a stage in the development of capitalism, regrettable but necessary – as if that thought could have made the cholera, the hunger, the child funerals, the alcoholism, the appalling street crime, and the horrible maimings in unsafe factory machinery any easier for the workers to bear at the time – and move on to admiring the well-lit and automated factories, the cheap consumer goods, the high salaries and relatively clean and safe cities that the workforce of developed nations enjoys today.

In the same manner, the metaphor of social progress applied to environmental issues makes it easier for us to dismiss the reports of ecological disasters, mass extinctions, climate change and escaped toxic products that we hear about today. “It is merely a stage” we tell ourselves. “A stage in our journey towards a brighter, cleaner, wealthier, greener, and ever closer tomorrow.” That is well and good if it turns out that the promises of Ecological Modernism are indeed valid, but that is not the issue – the point is that the metaphor of progress is used to make the modern industrial-consumerist society more palatable to people who would otherwise be outraged against it. The metaphor of social progress serves as a sort of social contract between the industrial economy and the concerned citizen, or between the lover of nature and the product of a consumerist culture in our own hearts. “Pollute for now, if you absolutely cannot avoid it in your trade” says the nature lover to the industrialist. “But you better show us some pretty good evidence that your practices are going to turn greener in the future and twenty years from now we will be able to laugh at our fears of extinctions and global warming as we inhale the fresh and crisp spring breezes of Manhattan and Kyoto to the sound of singing birds and whispering cars.” In this manner, aside from whatever validity the metaphor contains, in and of itself it serves as a peacemaker between the environmentalist and the consumer.

The third and the fourth key metaphors of Ecological Modernizer discourse are closely related to each other: they are the metaphor of win-win game and that of the Amish barn raising. The discourse is at pains to emphasize that the success of one interest group produces opportunities for the other to succeed – the growth of industry can create surpluses permitting a society to set aside wilderness and preserve it forever wild, the use of GM crops can increase yields to the point where much of the farmland

being cultivated today can be reverted to a natural state, and, conversely, higher standards for vehicle emissions can drive the development of more efficient motor engines that drive down the cost of transportation and deliveries, pushing costs of operation down across the economy.

Of course in order to take full advantage of a win-win game, the conditions that make it possible have to be created actively. This means that any interest group that is not working together with other is hurting itself the most – think of the Amish coming together to raise a barn for any one of them that needs one. When an Amish farmer helps others, he knows that this will mean he is guaranteed never to go without a barn. If he ignores the needs of his neighbors, he will have the disadvantages of operating without any help they might offer. In other words, since a state of the industrial economy where waste is not generated and the environment remains unpolluted is good for everyone involved, it is irrational for the interest groups not to come together and actively work towards a common interest by bringing about favorable circumstances on the path to such a state. Which interest group this benefits in the short term is immaterial – it's a win-win game after all! The only problem is: how can the participants know in advance that the cooperation will indeed benefit everyone in the long run, and isn't just a scam instigated by whichever group needs its barn raised?

From this metaphor, it naturally follows that it is equally irrational for the interest groups to resist when an institution with a superior ability to put two and two together, such as the state, lets them know when such a situation might arise and how the number of such situations which present opportunities for mutually beneficial action, can be maximized. In other words, these metaphors not only stress the virtues of working for a common benefit, they also imply the desirability of a visionary planner with the resources and the wide networks to assemble information with, who can provide the different groups with a plan of cooperation that will make the final mutually beneficial outcome likely enough to justify the intermediate steps.

Ecological Modernism in Practice

As mentioned above, the first nations, and the most successful ones, to use Ecological Modernizer discourse as a dominant paradigm of policy-making were the

corporatist societies of Germany, Japan, Sweden and the Netherlands. Its success in these nations has been exemplary.

Sweden became the first nation on Earth to develop a comprehensive program of waste reduction that included waste emitted in all three media of water, air and soil. In the section on Administrative Rationalism, it is described what difficulty governments encounter when they attempt to force a factory to reduce emissions – waste that used to be discharged into the river is now burned, when the factory is prohibited from burning it, the waste is condensed into sludge and buried, and so on. The separate departments of the Administrative Rationalist bureaucracy, each tied to supervising a separate medium, have historically discovered great difficulty in keeping up with these changes, and various attempts to establish an integrated form of supervision have historically run into great organizational difficulties – except the Swedish effort, which works by consulting with the owners and managers of the factory itself.

The factory is asked to submit a plan whereby it could reduce the total waste it generates and the amount of waste emitted, taking the media of air, water, and soil into consideration while planning; if the integrated pollution control plan is found acceptable, the factory is given a license to operate under it. The end result has been a marked and steady reduction in pollution emissions across all media¹³⁷. Unsurprisingly, it turns out that the people already running the factory are better at keeping track of their waste than bureaucrats from a government agency – all they needed was a reason to start caring¹³⁸.

Germany has its problems with regard to such issues as acid rain and the wasteful, highly emissive industries of its disadvantaged Eastern provinces, but there is no denying that it is able to muster the public consensus to tackle issues that have caused years of acrimonious debate and deadlock in Britain and the United States, such as CO₂ emissions, chlorofluorocarbons, energy efficiency, and many others¹³⁹. Japan has stood

¹³⁷ www.nationmaster.com. Sweden's tons of CO₂ emissions per dollar of GDP are lower than that of any First World nation except Switzerland.

¹³⁸ Albert Weale (1992) *The New Politics of Pollution*, Manchester University Press, Manchester, UK

¹³⁹ Dryzek (1997) page 139.

out among industrialized nations for the massive commitment of its industry to pollution control and energy efficiency, reaching lower emission levels than the vast majority of First World nations. The successes of the Netherlands in the environmental sphere have been discussed in the Economic Rationalist section, but here it must be mention that in exchange for the economic deregulation, the business community of this nation agreed to a major National Environmental Policy plan, adopted in 1989, which required them to “identify and change the activities that cause pollution.”¹⁴⁰ In that sense, both Economic Rationalists and Ecological Modernizers can claim the Netherlands as their own success story: the Ecological Modernizers saying that the environmental success story is due to the careful planning of the systems managers in the government, and the Economic Rationalists countering that the business and industry leaders would never have agreed to the plan if they had not received more freedom from taxes and regulation in exchange, and moreover would never have been able to afford the changes agreed upon if it had not been for the economic growth deregulation made possible.

Another success story of this discourse is Norway, which has incorporated environmentalist groups into its policy-making process to the point where it is as horrifying for a Norwegian minister to draft policy without the participation of the environmentalist groups as it is for his Swedish equivalent to do so without consulting the upper tier of the labor-union hierarchy, or for a Japanese minister to do anything without first receiving input from the leaders of finance and industry. Norway is home to Gro Harlem Brundtland, a former Minister for Environmental Affairs, two-term Prime Minister, and leader of the Labor Party who is known throughout environmentalist circles as the “Sultana of Sustainable Development” and to this day remains one of the world’s leading voices pleading the possibility of environmentally benign growth on a global scale¹⁴¹. As a Norwegian celebrity, Gro Brundtland has had a great influence on that society’s environmentalist culture, as well as on the culture of the government’s response to it. The modern policy-making of Norway emphasizes active and aggressive pursuit of

¹⁴⁰ Dryzek (1997) page 138.

¹⁴¹ Dryzek (1997) page 140. See also: www.wikipedia.org entry for Gro Harlem Brundtland.

economic growth, but revenue from this growth is carefully channeled toward environmental health programs and the preservation of wilderness, and all enterprises, whether controlled by private capital or by the state, are required to show steady commitment to reducing pollution through greater efficiency. In the developed world, Norway's levels of CO₂ emissions are higher only than Sweden's and Switzerland's¹⁴².

The success of Ecological Modernism in cultures where corporatism is a social and political tradition is not in doubt, even though, as has been mentioned above, Ecological Modernizers sometimes frighten corporatists by pursuing a policy of active change and seeking to re-invent the very premise of industrial capitalism. Ecological Modernizers have successfully reduced emissions, effectively promoted the voluntary adoption of cleaner environmental practices on the part of private capital, and above all, have actually managed to produce social, economic, and political consensus on dealing with environmental issues. It may be significant that of all the societies shown so far in this section, only Netherlands has shown substantial economic growth during the two decades since the Ecological Modernizer discourse became dominant among policy-makers, while the least free-market-based of them, such as Sweden and Japan, have suffered substantial economic setbacks¹⁴³. But it is true that though the economic promise of Ecological Modernism remains elusive, as a method of actually improving environmental health Ecological Modernism appears consistently superior to Administrative Rationalism (though Switzerland, the only First World nation with lower emissions rate than Sweden, is committed to the Democratic Pragmatist approach, and Netherlands can be claimed by both Ecological Modernizers and Economic Rationalists. In addition, proponents of libertarian environmentalism and eco-capitalism would assert

¹⁴² www.nationmaster.com

¹⁴³ www.wikipedia.org entries for "Economy of Germany", "Economy of Sweden", "Economy of Japan", "Economy of Norway" and "Economy of the Netherlands". For 2004, Germany had GDP growth of 1.6%, Sweden 3.5%, Japan 2.7%, Norway .5%, and the Netherlands 1.3%. On the other hand Netherlands has enjoyed an extremely robust growth rate in the 1990's while Japan and Sweden both struggled with unemployment and inflation; Germany still does. Economically speaking, the Netherlands, though it seems to be struggling now, is a sure winner over the past decade.

that their approaches have not yet been tried on a society-wide scale.)

The Ecological Modernizer discourse has faced greater challenges as it attempted to spread to nations who do not have a tradition of corporatist policy. Britain flirted with Ecological Modernization in the early 1980's, but gave it up in favor of its current Environmental Problem Solving approach¹⁴⁴. The ideas of Ecological Modernism slowly penetrated British and European thought over the next two decades, but grafting it onto a non-corporatist society has proved a challenging task. The basic assumption of corporatism is that the government concedes a certain measure of each group's goals to this group, and these groups in their turn do not press for more than they are given. Ecological Modernism sweetens the deal with the promise of a fundamental transformation of the economy that will improve productivity and efficiency, making all sides wealthier, as well as the environment, making nature and nature-lovers happier as well. But this requires everyone to trust the government as an honest arbiter, and to find the prospect of seeking conflict and perhaps winning a complete victory less attractive than accepting a consensus and a partial concession. In both requirements, advocates of Ecological Modernism have faced significant cultural opposition.

Critics of the discourse use the works of Hayek and Popper to argue that the government cannot possibly know enough about the real state of the economy to draft a workable plan of reforming it, and that the various stakeholder groups it consults are unable to communicate this information to the government in a form that preserves the context – and without the context, it is impossible for the government's systems managers to appreciate the information's true significance. The only way a reform plan can truly produce improvements in economic efficiency, argue these critics, would be through establishing a faint outline of desirable goals and letting the free market/free public debate carry them out – and if the government's information was truly flawed, argued they, what need for the government to dictate to interest groups who got what and what path the economy should take?

The proper way to reform, argued such people, would be by trusting to the

¹⁴⁴ Dryzek (1997) page 145.

information conveyed by market signals, or the unhindered public forums. Both the Economic Rationalists and the Democratic Pragmatists saw meetings of co-opted elites behind closed doors as a poor way to make policy, and the system of all-around concessions through which each group got a chance to shape policy as a way for the government to legitimize its dominant role and keep each group silent while the government imposed a plan of reform designed by committee.

Under such circumstances, argued the critics, there was nothing particularly valuable in building a consensus, either. Truth, they argued, is born in debate, not consensus -- and while the Ecological Modernizer discourse did produce a remarkable degree of public commitment to environmental policy, it did not necessarily produce a commitment to the right *sort* of policy, but merely an illusion on the part of the public that the power elites will take care of them. Such people argued that while this sort of consensus was indeed superior to a bureaucratic impasse that characterized Administrative Rationalism, the successes of Ecological Modernizers in corporatist societies could all be explained using the conceptual toolbox of the critics' own discourse or discourses.

Japan, for example, could be argued as having achieved its high energy efficiency because, being on a chain of islands, it needs to import all the fossil fuels it uses, so the economy was driven towards efficiency through sheer market forces. Norway, they argued, enjoyed the blessings of immense oil and natural gas wealth, high hydroelectric power potential so that more of the oil and gas could be sold to pollute air abroad, low population density so that GDP growth rapidly produced affluence and eliminated the citizens' concern for immediate pecuniary gratification, and a high degree of cultural attachment to the natural world that made the Norwegian people psychologically inclined to care about pollution more than most cultures. Sweden was seen as another example of low population density plus an economy that depended on the highest degree of efficiency to stay competitive in the global marketplace under the restriction of the Swedish socialist state. Eliminating waste, they argued, was as much a priority for Sweden as energy efficiency for Japan, and explainable through simple market signals once again. Netherlands they saw as a victory for Economic Rationalism instead, and Germany as proof that even with the best consensus in the world, an economy with 9%

unemployment still cannot afford to remodel its polluting factories.

Nevertheless, as the discourse that has been most consistently successful at ending the feuds between interest groups, and as an ideology that retains an active role for the state while still making use of the natural flexibility that the free market can offer, Ecological Modernism has continued to win itself followers in nations without a corporatist tradition.

The modern form of the Ecological Modernizer discourse in the United States seems to have developed as a response to the ideological left-right split that has become increasingly more pronounced in the US society since the election of Ronald Reagan to the White House. The Ecological Modernizer view sought to transcend these differences, and so enjoyed a significant measure of success all through the 90's as people turned to these usually well-educated and very articulate people to get things done in the midst of a partisan deadlock. The prosperity of the nation during this period appeared to have validated the principles of this discourse, at least until the troubles began with the election of 2000, the subsequent recession, and the cataclysm of September the 11th. The discourse is still very influential across the nation, and (excepting the much less powerful Democratic Pragmatist discourse) the only one among the major five that has managed to span both significant political parties, with such prominent adherents as Al Gore of the Democrats and Pete Wilson of the Republicans.

The Ecological Modernizer's attitude of forming a plan, receiving input, and delivering the verdict is often justified by adherents of this discourse through references to the well-known compromises of the Constitutional Convention, which created the modern federal system under which the United States operates to this day. On the other hand, the Constitutional Convention had been a participatory effort by many "stakeholders" to create a better system: the idea was not for a central body to listen to everyone and then incorporate these points of view into a single plan, but for persons of diverse interests and inclinations to bargain with each other freely, until the plan emerged after numerous "horse trades" had made the delegates of very different colonies feel that the final document would genuinely make them better off than any likely alternative. Any of the colonies involved were free to make the system come crashing down by refusing to participate further, and so even the efforts of such visionaries as James

Madison and Alexander Hamilton consisted more on selling their plan to their dubious counterparts in other delegations than of “receiving input and forging a compromise” the way policy makers in positions of authority so often find themselves tempted to do today.

3.1.4 The Green Romanticist

Classification

Green Romanticist is classified by Dryzek as both Radical and Imaginative. As such, this discourse rejects the very foundation of the dilemma that occupies the Problem-Solving Discourses and Ecological Modernism. Instead of seeking for ways to reconcile modern industrialism with the natural world, they seek to purge the assumptions of modernity and the addiction to industrial society’s supposed amenities from the human soul, like the 19th century Romantics rebelling against the stifling rationalism of the Enlightenment¹⁴⁵. The ultimate goal is to return humanity to its originally intended state as a single component in a complex and diverse ecology, aware of its non-exclusive status and delighting in being a part of the natural world rather than trapped in an unnatural technocratic existence as Nature’s orphan. A Green Romanticist seeks to abandon ambitions of technological dominance, and to accept the natural abundance that Nature provides for us all. Green Romanticists do not seek to dominate or manipulate, but rather to experience and to worship.

Ideological Pedigree

Green Romanticism has evolved out of such literary Romantic authors as Wordsworth, Keats and Southey, with perhaps a little of Willian Blake. As Romanticism

¹⁴⁵ Dryzek (1997) page 155 “This rejection of science, embrace of empathy and insight, and cultivation of radically different ways of experiencing self and nature is shared by contemporary green romantics.”

developed through the 19th and early 20th century, such authors as John Muir offered them a vision of nature that was everything they were trying to find, and the antonym of everything they sought to escape. Nature was wild, spontaneous, mysterious, nurturing, unique in the heart of every individual who experienced it, and most of all, even in its most savage instantiations, it was peaceful, peaceful to a degree unmatched anywhere in the vain, conformist, sterile and regimented world of industrial civilization. As cities got larger and noisier, jobs more pointless and monotonous, and relationships more jaded and alienated, next to the cities of milling humanity mystery and delight still burst forth fresh every spring, and life teemed and grew and struggled and died and teemed again in an eternal cycle of renewal.

As the 20th century went on, the Romanticists recognized that nature was not as invulnerable as it seemed; the urge to return to Nature fused with the need to save her from ourselves, and this naturally brought about meditations on what sort of living beings we were that Nature needed saving from us out of all her children. At that point Aldo Leopold and Rachel Carson were left behind by the new generation of environmental thinkers, who now drew inspiration from Edward Abbey, Murray Bookchin, and David Foreman, or Pentti Linkola and Arne Naess in other nations. Instead of merely enjoying nature as an aesthetic experience, or delighting in it as a spiritual experience, Green Romanticists used what they learned from nature to challenge the fundamental assumptions of human culture – no longer merely content with seeking to escape industrial society; they realized it would follow them wherever they went. Now they sought to cast it down. Most often, they recognized the futility of violence: there was no point in being driven over by the bulldozer of industry. The trick, most Green Romanticists decided, was to convince the driver to step out and join them in the woods.

Ontology, Relationships, Actors and Metaphors

Adherents of a “deep ecology” world view¹⁴⁶ that sees capital-N Nature as far more important than our single upstarts species, and regards our species consumerist culture that leads us to consume so much power in the first place as something akin to the unchecked replication of cancer cells within a body. If we had only sought spiritual enrichment from a communion with the beauty of nature, rather than “natural resources” for our own enrichment, argue the Green Romanticists, we would never have placed a greater burden upon the planet than it can bear, and would have had an infinitely superior quality of life than our worship of material possessions can bring us. It might seem like poetic moonshine to a, say, Economic Rationalist, but to a Green Romanticist, it is a truth of fundamental importance. Nature, says his discourse, is sacrosanct. We have no right to treat it as something to be managed, exploited and manipulated for our petty human desires.

Even such radical reforms as those proposed by the Ecological Modernizer totally miss the point when dealing with the problems that concern the Green Romanticist. The Ecological Modernizer seeks to preserve nature in order to harvest resources from it in a sustainable manner – and as the Green Romanticist sees it, this sort of “management” only invites further alienation of the human spirit from the community of all living beings on Earth, and ultimately leads to other abuses in the future. At best, the Ecological Modernizer appears to be offering to reduce wild nature to the status of a farm crop, to be kept fenced off, managed, and used for the benefit of its despoilers. The alternatives offered by the other three discourses appear to the Green Romanticist to be worse still – even the Democratic Pragmatist version, which would be regarded by the Green Romanticist as the option of a sellout, who allows the short-term interests of despoilers to determine future policy.

Aside from the basic entity which gives rise to all the others – that is to say, Nature – Green Romanticism recognizes the individual and that individual’s inner

¹⁴⁶ Bill Devall and George Sessions (1985) *Deep Ecology: Living As If Nature Mattered* Peregrine Smith publishing, Salt Lake City, UT.

world¹⁴⁷. The goal of the individual is seen to be in achieving harmony with nature so as to actualize their own inner nature in the relationship that nurtures it best: at peace, a part of the immense interlinked whole which allows the individual to stand outside his or her narrow human perceptions. The precise nature of that whole differs – deep ecologists who are happy to observe the Darwinian cycle of creative destruction would not see themselves as part of the same nature as an eco-feminist, or an eco-Christian. This subjectivity is part of the non-conformity that Green Romanticists treasure about their experience: what, they ask could be more conformist than the same reality in which everyone has to live?

Green Romanticism in Practice

A problem with this discourse is that it does not allow for an organized action on a larger scale: the Green Romanticist distrusts both the hierarchy of experts as “beholden to the interests of consumerist society” and the action of the grassroots as “leaving the decision to persons whose consumerist lifestyle blinds them to the nature of the question.” A small minority of Green Romanticists turns to violence; many more stage peaceful protests, or stunts such as chaining themselves to trees, voluntarily exposing themselves to dangerous waste, etc. Many other seek for an internal victory, seeking to transform their own lives to live in proper harmony with nature, and hoping that if they make a sufficiently happy and harmonious example of themselves, their anti-consumerist lifestyle shall attract others to live like that too.

The archetypical Green Romanticist is the Finnish philosopher Pennti Linkola, who has retired from his job, earns his living as a fisherman in a boat he rows himself, and lives off the money he makes selling the fish door-to-door using a horse, while continuing to write books and articles in which he blasts industrialism and overpopulation and sings paeans to the natural beauty of lakes and birds. Some pursue a green lifestyle

¹⁴⁷ Dryzek (1997) pp. 163-167.

in the city, eating vegan food and taking short showers, some take up jobs that involve conservation or education, yet others start small ecologically sound businesses raising organic food or dying cloth with natural fibers. All try to live a life that sets an example.

3.1.6 Likely Roles of the Discourses

Table 2 lists the positions that the discourses may be most common. This table is based on our idea of what the discourses look like. The table was also created through using Dryzek’s examples of the discourses in practice. Table 3 gives some hypothesized answers to questions we felt were important in policy making according to each of the discourses.

Table 2: likely roles of different discourse holders in the deregulation process

Discourse	Likely Social Role	Opinion on Government Control	Opinion on Markets
Administrative Rationalist	Bureaucrat, Regulator, Scientist	Positive Good	Markets based on incomplete information; Non-experts do not know enough to make good buying decisions.
Democratic Pragmatist	Politician, Grassroots Activist	Skeptical; People should control government	Markets must serve local communities, empower, not suppress, community spirit
Economic Rationalist	Business owner, Economist, Politician, Lobbyist	Necessary evil; Government to enforce property rights; prevent fraud, violence, etc, but otherwise to stay out.	Markets resolve all problems: if bad effects are felt, demand arises for their rectification, which the markets satisfy
Ecological Modernizer	Politician, Engineer, Scientist, Regulator	Positive good, but with reservations; Government as mediator, but when decision is made, government must constrain resistors to obey it.	Markets subordinate to policy, but must be used for their virtues as a signaling system, within a properly organized society.
Green Romanticist	Grassroots Activist, Scientist	Necessary evil; Government restrains greed, promotes awareness, sponsors research in global warming, biodiversity, ecology, etc.	Markets are expressions of people’s inner state: in a consumer culture, markets reward taking instead of giving, promote further consumerist behavior

Table 3: answers to governing questions in electricity policy making

Discourse	How Is Behavior Modified?	What Limits Resources?	How Urgent Is Reform?	Who Should Be In Ultimate Control?	What should be the ultimate goal of policy decisions?
Administrative Rationalist	Statutory Laws created by the governing body	Combination of two factors: Physical Availability and the User's Access to Information	Urgent to begin implementing the hierarchy now and proceed as gradually or as rapidly as incoming information warrants	Hierarchy of Information-Collectors and Information-Integrators; Experts making reports to professional administrators trained in management and policy	Stability. The consumers should be served by a consistent and well-informed decision-making body whose duty is to provide affordable rates, as long as the consumers do not demand more electricity than the economic and environmental situation warrants.
Democratic Pragmatist	Initiative of individuals coming together in a grassroots movement.	The degree to which use of these resources benefits individuals and their communities	As urgent as the citizens feel after the information is made available to them	Citizens coming together to discuss common interests	The goal is to empower individual communities, whose citizens will meet to make all the choices.
Economic Rationalist	When problems arise, the demand for their solution creates supply	The degree to which markets are free to create them	It is urgent to unshackle the mechanism of supply and demand before constraints on this mechanism allow current problems to grow into a crisis	The consumers demanding goods and services and the businesses providing them, coexisting in a mutually profitable symbiosis	To empower businesses and entrepreneurs, mostly through subtracting all distortions on the pure free market.
Ecological Modernizer	Plan of reform is drafted by interaction between policy makers and all interest groups, and then implemented from the center.	The degree to which society is rationally organized	Urgent: irrationality of current arrangements produces irrationality down the road	Control should remain with a center of planners, but it should not be "ultimate," all decisions should receive input from every interest group affected.	To rationalize decision making so that the interests of every group are served to everyone's mutual advantage.
Green Romanticist	Change through the example of individual lifestyle, education and government statutes stopping outright ecocide	Nature should not be viewed as resources in the first place. As part of a stable ecology, humanity would receive enough to survive as long as it gives back equally	Every moment our relationship with Earth is distorted is a catastrophe, but to change society through personal example takes time. Changes should begin at once for an individual, but their effects will be seen only when everyone learns to value Nature through example	Control should remain with the natural processes of ecological feedback that have kept nature balanced for eons before humans rejected them.	To prevent human greed and alienation from utterly destroying the natural world before the example of harmonious living converts a sufficient number of people.

3.2 *Electric Sector History and Deregulation Reform*

This section talks about the history of the electric industry and how deregulation has occurred in the past few years. The history of the industry gives an account as to how different forms of power generation have entered the market over the years and attests to how different generations viewed the impact the industry has on the environment. After the history of the industry, we examine 4 major deregulation models: California, Pennsylvania, Texas and Massachusetts. We look at what discourses dominated their creation and set up, and we look at the results each model has had. Finally we discuss the Massachusetts Technology collaborative and what is being done to promote a more environmentally sustainable electric power industry.

3.2.1 History of the Industry¹⁴⁸

The first phase of the Electric Power Industry was started in the early 1880's by Thomas Edison. He started this first company on September 4, 1882 to generate electricity mostly at night for those that had started using his concurrent invention of the light bulb. His business started with only 59 customers and a price of \$0.24 per kilowatt hour, much higher than we are used to today. The use of electricity began to spread, along with the demand of electric motors. Soon many other electric power companies began springing up in order to meet the demand. However, these companies were all local to the places where their electricity was actually used. It wasn't until 1896, when George Westinghouse created a hydroelectric development in Niagara Falls, and provided electricity to Buffalo, New York. Soon electric power companies had spread throughout the U.S. and had also began creating more efficient use of coal.

The 1900's began an era of privately owned electric power generation. It also began the beginnings of state regulation of electricity. Georgia, New York, and Wisconsin were the first to practice regulation, which began in 1907, and the other states

¹⁴⁸ http://www.eia.doe.gov/cneaf/electricity/page/electric_kid/append_a.html

soon followed. The growing economy accelerated the increase in electrical power usage and production, jumping from the teens to about 67% in urban household use by 1932. The idea of having municipal power production had been introduced, however, 94% of all power came from the private sector.

In 1933 a change occurred in regulation. The federal government saw electricity as something that needed to be regulated on a federal scale and so it began to pass its own regulations on the industry. The federal and state government also began to see the importance of municipal electricity at this time and began to increase the public sector of the industry. World War II further aided the electric power industry. Electricity prices began falling faster until they had reached \$0.03 per kilowatt hour. This period also aided the spread of electricity, which had begun to spread to rural areas. After WWII, rural housing with electricity had risen from 50% to 80%.

After WWII a new type of electrical power generation was discovered: nuclear power. The influx of nuclear power technology caused a 1% change in the type of generation distribution, but soon it will turn stagnant due to issues from nuclear testing and disposal and the “3 Mile Island” incident. However, during this time period, environmental protection started to become an issue. Up until 1970, the industry was increasing in generation. However after the 1960’s people began to notice the increase in cost due to environmental requirements, also, the blackouts of 1965 caused concern in the reliability of the industry.

In the years following 1970, the power industry was even more hit. Issues such as inflation, fossil-fuel prices, environmental protection and issues concerning nuclear power made it hard for companies to generate a profit therefore stunting growth and price decreases. Another problem for the industry developed when conservation laws were passed to prevent most companies from turning to petroleum and natural gas. And in the 1980’s, there was even less growth and spreading. Finally, in the 1990’s, many changes have taken place in the industry. Environmental concern is now a big issue in production. In addition, non-utility companies began generating their own power, causing the industry to lose a large portion of its market. And finally, the Clean Air Act was amended and signed by Congress in an attempt to reduce the amount of sulfur dioxide in the atmosphere in April, 1993. This act caused many companies to reform to even stricter

pollution regulations set by the Act, and many feared they would not be able to meet the standards.

3.2.2 Major Deregulation Models

Now that the history of industry has been taken care of, we reintroduce the discourse theory into the policies in 4 of the major deregulation models. Each model (CA, TX, PA and MA) has a different version of deregulation and the discourses that apply to each model.

A brief explanation of the California Energy Crisis can be found in Appendix A.

California

Ecological Modernizer

Deregulation was approved in 1996, implemented in 1998, and ended in 2001 as the whole system crashed and burned. Currently there is heated debate within the Schwarzenegger administration on whether to try again.

Under deregulation rules, all wholesale power was to be traded in the PX (power exchange) market. Bilateral long-term contracts between generator and utility were forbidden, and all trading contracts were to cover no longer than a 24-hour period in the future. The highest bid on the PX market became the “market clearing” price, and all units of power were sold at that price for that hour. This last measure was an effort to encourage generation.

Now, let us discuss how the discourses enter the picture. The attitude taken by California’s government reflected the discourse that, in the last 15 years, had come to dominate not merely that state but a very large fraction of the United States’ policymaking culture. It is a discourse of people usually educated both in the sciences and the humanities (but less often in economics and finance) who wish to resolve the old inefficiencies without sacrificing “the good parts” of any particular system or sector, or the useful knowledge that people in that system or sector have accumulated.

Unfortunately the philosophy of the Ecological Modernizer is based on listening to every stakeholder in the process, and seeking to reach a consensus acceptable to all, but then turning around and keeping only those parts of the stakeholders’ suggestions that

do not conflict with the policy maker's visionary plan. The stakeholders' role is not that of active participants, but that of a sounding board for details of the plan's implementation; and the Modernizer seeks to control the agenda of any given stakeholder or group of stakeholders by precipitating a confrontation between these stakeholders and others who hold the opposite point of view. The Ecological Modernizer can then emerge as a mediator, proposing a plan that the groups can pressure each other to agree on even if it did not satisfy any one of them, dissenters being castigated for demanding more than their "fair share." Under such circumstances, a lot of the participants settle for what the other groups will let them have, rather than for what they know they truly need to be able to operate under the new circumstances.

In the case of California, Pete Wilson's government consulted numerous stakeholders in the fields of power generation and distribution, environment protection, online trading, public policy, and economists. Under such circumstances, it is curious how unsatisfied all parties remained with the consensus they supposedly worked out, before the pricing crisis. Environmentalists claimed that in the excitement of deregulation the state neglected its once extremely effective programs to encourage demand-side efficiency in energy use. Utility managers and economists decried the state's numerous restrictions on the construction of new generation assets and oil refineries to power them, which made the importation of electric power purchased from outside wholesalers so indispensable, even though these were often the same people who loudly proclaimed just a few years ago that the new market would make old concerns about dependence on imported energy as obsolete as last year's computer model.

In short, the vaunted consensus of stakeholders that approved the deregulation seemed to have consisted of people who knew they were not going to get what they wanted right now, and so settled for what the new plan was willing to give them, hoping that Pete Wilson's grand vision would provide the fresh opportunities he promised. Absurdities like the PX market were papered over with such universally acknowledged truisms as the assertion that the presence of a market would certainly make for more competition, and thus lower prices, than the absence of a market! Exactly what this "market" would be and how its price signals would be transmitted was ignored, because digging into such questions would not be "fair", or so said the supporters of deregulation.

The proponents of free markets were already given a forum in which buyers could negotiate with sellers: asking for more would not make for proper consensus! The same reasoning applied to utilities, environmentalists and everyone else: anybody who accepted the goodies which the new consensus handed out was thereby implicitly bound to silence on any flaws they might otherwise have seen in the main plan.

Pennsylvania

Economic Rationalist with Administrative Rationalist undercurrent

Deregulation was approved in 1996, implemented in 1998. Pennsylvania is considered a model deregulation “success story” due to its success at reducing costs and creating a free market for electricity generation. In the first year of deregulation alone, electric power prices had fallen by 17%, and by 2001, 24% of all electricity consumed in the state was bought from competitive suppliers! Ironically, one of the main reasons for this drop has been the great inefficiency of the State’s previous electric production and distribution system, which resulted in some of the highest electric rates and transmission tariffs in the United States – about 15% higher than the national average. The high prices obviously attracted more competing providers to the region than would have chosen to enter the market otherwise.

In addition, while California faced the stormy seas of price fluctuations alone, Pennsylvania is part of a five-state common electricity market. The bigger the market, the more competitors it attracts, while Pennsylvania’s status as a member of the common market gives it greater bargaining clout in negotiating with wholesalers.¹⁴⁹ Pennsylvania generates 95% of its own electric power, and uses cheap coal and nuclear power plants, after a massive program to expand the state’s generating capacity. It certainly imported much more before the crisis. 33% of California’s electric power is generated by natural gas, which can be much more efficient per thermal unit depending on sales, and much

¹⁴⁹ David Lazarus (2001) *San Francisco Chronicle*, February 18th. “Pennsylvania Does Right By Deregulation; It Learned From California Gaffes”. Retrieved from: <http://www.sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/2001/02/18/MN188904.DTL>

better for the environment in terms of emissions than coal would be, but is unfortunately a great deal more expensive. Moreover, Pennsylvania's laws regulating the construction of new electric power plants were much more lax than pre-crisis California's.

A PX market was not required as the only venue for power purchases in Pennsylvania, and state utilities were allowed to divest their assets or not as they saw fit (though a separation of generation assets from transmission and distribution ones was indeed required.) They were also given the option of bargaining with wholesale providers for long-term bilateral contracts to hedge against volatile prices in the future.

Retail rates were frozen until 2010 with one adjustment allowed in 2005. The longer freeze period is intended to spread the recovery of stranded costs over a longer period. Instead of a "market clearing price" to encourage generation, Pennsylvania has a "shopping credit," which is financed through the same rate freeze used to recover stranded costs. It is about 15%-20% of the old provider's rate, and it is given to all customers who switch their electricity providers, allowing them to "shop around" for the one they like best. The new rate, augmented by the "shopping credit" so that it is, in some cases, greater than the current market price, becomes the price that competing power providers seek to underbid. This could attract more wholesalers into the market, generating bidding wars between them that might eventually drive wholesale rates down.

While deregulation was a success compared to the disaster of California, very little advantage was taken of this success to promote green energy generation. Incentives for new green installation, particularly those for smaller generators, were nowhere near as aggressive as those of Texas or Massachusetts. This situation has kept improving through 2003 and 2004, but Pennsylvania is still not using its wind power resources the way Texas, New York or Montana are using theirs.

Unfortunately Pennsylvania's version of deregulation suffered from other problems besides its lack of emphasis on green power production. No effort was made to diversify the market, meaning that even after deregulation came into force, the old utilities still controlled 82% of the state's generation capacity. An additional problem lay in the inefficiency of the local grid, which had been designed for a smaller load. This made it too expensive for startup companies to import electricity from outside the state, meaning that until and if those startups came to own their own generation assets, they

were required to buy their electricity right from the old utilities, which not only owned most of the assets, but also competed with the newcomers directly, since five of the six old utilities still retained their retail arms.

The PJM (Pennsylvania, Jersey, Maryland) Interconnection system operator, which runs the electricity transaction markets across eight states and the District of Columbia, requires all companies serving customers in the region to maintain an electricity reserve for emergencies, regardless of what it costs them – a regulation which obviously stacks the deck in favor of the large utilities, despite the fact that a smaller company would not be expected to provide a region’s emergency power supply in any event. Since electric power cannot be stored, the electricity reserve rule forces small companies that do not have enough generating assets to purchase the reserve from the large utilities with sufficient generating capacity, essentially taxing the newcomers in favor of the incumbent.

Finally there is the problem of the “shopping credit” extended by the Pennsylvania government to the customers who make the switch. The purpose of the shopping credit was to attract more competition to the sector, but given the advantages provided by incumbency, the lure of the shopping credit is often negated. On the other hand, it is financed by a cap on retail prices – prices which otherwise could have already spiked, brought the new suppliers in all by themselves, and then come down to below their previous levels due to the real increase in competition that a spike would have brought. At least that is the assertion of many Economic Rationalists today – and according to these people, the long period of capped prices is costing millions to the Pennsylvania ratepayers.

These problems have led to a major readjustment of the deregulated market in the years 2001-2002. Originally, 10% of all residential consumers in Pennsylvania had switched to an alternative provider (20% of these to a “green” provider);¹⁵⁰ by 2002, 44% of these switched back – not necessarily because they wanted to, but because the

¹⁵⁰ *Minnesota Issue Watch* (2001)“Pennsylvania Model For Deregulation; Consumers Benefit But Local Revenues Shrink” available at: <http://www.mnplan.state.mn.us/issues/scan.htm?Id=416>

difficulties listed above have driven nearly half the startup companies that entered the market before 2001 out of Pennsylvania.¹⁵¹ Those that remained have been forced to pass the costs of their competitors' incumbency advantage on to their consumers. The savings are still there, but often so miniscule, on the order of 2-to-3% that many Pennsylvania consumers no longer bother switching.

On the other hand, it pays to remember that the reason there is little difference between utility and newcomer offers in Pennsylvania today was because, among other things, the initial surge in the demand for alternative providers just after deregulation had frightened the large utilities to the point where they had to drop their own rates by 20%. Pennsylvania consumers no longer suffer from the notoriously high rates that afflicted them before the deregulation, so that in this sense, deregulation worked. We believe it would have worked much better had something like the Texan model been adopted.

Texas

Economic Rationalist with input from Democratic Pragmatist and Ecological Modernizer

Deregulation was approved in 1999 in Texas, implemented in 2002.¹⁵² The success of the 1999 deregulation proposal made Texas the largest state (land-wise) to deregulate its electric power generation. One unique feature of Texas makes its pre-reform situation very different from that of any other state. Long ago, the power producers united under the umbrella of ERCOT (Electric Reliability Council of Texas) all signed pledges not to export the electric power they generate outside Texas' own borders, which had the curious effect of making Texas the only state whose energy sector is not regulated by FERC.¹⁵³ This exempted Texas generators from at least some of the restrictions imposed by Washington, but unfortunately led to a severe underutilization of Texas' electric power production capacity, which could have been an export resource

¹⁵¹ Benjamin Y. Lowe, (2002) *Philadelphia Inquirer*, May 19th. 'No Savings From Power Competition', available at: <http://www.philly.com/mld/inquirer/3294099.htm>

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with great revenue potential.

The underutilization of capacity this electric sector autarky had caused eventually resulted in massive government efforts to boost consumption within the state, making Texas government the bogeyman of energy-efficiency activists everywhere. The burden of additional capacity that the utilities could neither use nor divest in turn caused an increase in the costs of electricity production, while the government efforts to boost electricity use caused an artificial increase in market size – yet not a sufficiently large one to get all the utilities’ capacity excess spinning and producing revenue. End result: the cost of maintaining the unused generator machinery is passed down to the consumer, making Texas retail rates much higher than they should have been in the middle of all that oil and gas. Before deregulation, Texas was near the middle in the rankings of US states with respect to electricity rates -- the average revenue per kWh stood at 6.07 cents, which placed Texas in 25th place.

This inefficiency of pricing was something that the extremely pro-business government and popular attitude could not long tolerate. Not surprisingly, the biggest push for deregulation came from the industry, where factories often generated their own electricity but could not interest their usually already overproducing local utility in buying up any excess they produced. To them, deregulation was a chance to sell power that, thanks to their co-generation practices, they already produced more efficiently than the large central plants.

The first proposal for restructuring was made before the Texas legislature in 1995, and resulted in the Public Utility Regulatory Act passed in that year, which established an ISO (Independent System Operator) to control the day-to-day operation of electricity generation and distribution. The ISO, established by ERCOT, is not like most ISO’s just like ERCOT was so unlike most associations of utility governors. It “does not participate in generation dispatch, in power exchanges, in providing ancillary services, or in establishing prices other than determining the cost of any redispatch needed to allow transactions to occur.” In other words, the ERCOT ISO acts more as a maintenance

service than as a firm directing the distribution of energy.¹⁵⁴

In 1996, a statement published by the Texas Public Utility Commission (PUC) made clear the requirements under which the 1995 law was to be implemented, and the ISO was to begin operations. Among the rules there was a provision requiring all transmission-owning utilities in the state to provide open access to their electric power delivery networks and for all ancillary services that came with accessing the network. The rule also required the separation of generation, transmission, and distribution costs and rates, so that each customer could calculate the exact amount he or she was paying for each aspect of the service. Most importantly, Texas would finally bring its power plants in compliance with FERC regulations (although to this day ERCOT does not have transmission lines that cross state boundaries).

Actual legislation mandating competition in the retail electric power sector was passed in 1999, in a statute known as Senate Bill 7. With three years given to utilities for re-organization, 2002 was set as the date on which the “Pilot Program” of introducing customer choice across the state was to take effect. The rules of transition were designed to bring consumers the benefits of market competition as fast as possible while still giving the government a chance to pull back if they saw any disasters in the making. Transmission and distribution services would become open to competition by 2004. Utilities directly owned by municipalities or electric cooperatives are given the option of not participating in the new competitive market, in which case they would be allowed to hold on to their old territories until such time as they do decide to engage in competition.

Hedging through bilateral contracts is highly encouraged. Utilities are not required to divest assets, but rather to “unbundle” them, separating into separate companies for generation, transmission, retail, etc. These separate companies can then enjoy the advantages of being one company through signing bilateral contracts with each other, or they can deal with other companies if they wish. Those utilities that do not so

¹⁵⁴ Oil & Gas Journal Online, Restructuring of the US electric utility industry hit snags in 2000

split are required to put 15% of their generation assets up for auction every year for 5 years. In an effort to prevent control of the market by an oligopoly, the law mandates that no single provider can control more than a 20% share of the state's total generation market, but of course firms are given the option of unbundling the excess generation capacity into separate companies as well.

Retail rates are allowed to readjust twice a year, based on the market situation at the time;¹⁵⁵ they become totally unconstrained either after 3 years have passed since the first day of the Pilot Program, or when 40% of a utility's customers have chosen an independent provider – whichever comes first. At that 40% point, those utilities that chose not to split into a generation, transmission and distribution companies are no longer required to divest their assets. Even if the requisite five years have not yet passed, it is presumed that by this point, the other 60% of the customers have an alternate provider to rescue them from any iniquities the utility may seek to perpetrate, and provided the utility is not breaking the 20% rule, it no longer becomes the government's business whether it has unbundled or divested. The retail rates of the first three years do carry a surcharge to recover stranded costs, but the surcharge is re-adjustable with the rest of the retail rate, subject to negotiation with the Texas PUC and the retailer's desire to hold on to customers in a deregulated market.

The State of Texas undertakes to supply each area with a POLR (provider of last resort) if during the restructuring some consumers are left unsupplied. In order to encourage newcomers to generation, the regulations for building new power plants have been simplified to a very great degree. Texas law, like most states, before deregulation required all utilities to build sufficient generation capacity to meet demand reliability. Among other provisions of the restructuring law, 2 giga-watts of additional "green" energy capacity (i.e., "green" capacity that did not exist when the law was passed) must be in place and online by 2009. The construction requirements are staggered according to a rigid schedule: 400 of these new megawatts must be in place and available for distribution to consumers by 2003, an additional 450 by 2005, another 550 MW by 2007

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and 600 more MW by 2009. Again, this is easier for Texas than in most other states, since even before deregulation, Texas, with its plentiful open-prairie wind and clear, sunny weather had more renewable energy resources than any other state, California alone excepted.

Competition is encouraged through posting a “price to beat” every time rates are re-adjusted: providers fight to underbid the price and induce the customer to switch. This is not the same as the Pennsylvania “shopping credit,” since it is not given to the consumer to encourage shopping for a new provider; rather it is based on the cost of service plus sufficient profit “headroom” to allow what the Texas PUC thinks is a sufficient inducement to competition.

The Texas experiment in deregulation remained undeterred by the California crisis of 2001, with numerous officials stating publicly that “it can’t happen here.”¹⁵⁶ The confidence appears to have not been misplaced: by 2001 the PUC had already certified the first alternative providers, and on January 1st of 2002, retail choice became available to small commercial customers without creating any runaway price growth. Residential customers followed on June 1st of the same year, although under the state’s Pilot Program for deregulation, only 5% of all residential customers were offered that choice on that first day, with the remainder being given the option of switching providers in staggered fractions over the subsequent 12 month period.

Since then, energy prices have generally declined, and the new electric power market has attracted numerous investors, including those from outside the state. Even the spectacular downfall of Enron, a firm which at one point almost came to symbolize the new and liberated energy market, could not do much to dampen this new market’s exuberance. The number of residents choosing alternative providers has continued to increase since 2002, and about 6% of those that choose an alternative provider choose to purchase their power exclusively from renewable energy sources. Some problems with consumer education continue to persist, but overall, among deregulated state markets for

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electric power, Texas is generally considered a success story.¹⁵⁷ Of course advocates of economic liberty are not entirely comfortable with the heavy-handed approach it took towards the large power utilities in requiring them to either divest or unbundle.

Massachusetts

Ecological Modernizer plus Democratic Pragmatist

In December of 1993, Governor William Weld convened a group of electric power industry stakeholders, co-chaired by the Division of Electric Resources (DOER) Chairman and the Department of Public Utilities Chairman to study possible modifications of the existing system, with electricity rate cost reduction as the group's primary goal. In July 1994, the report of the group included a set of principles called "Rules for the Wires," which introduced the suggestion of competition among electric power generators. February of 1995 saw the establishment of a commission to look into how electric power sector restructuring promotes competition, economic efficiency, and consumer benefits. In November of the same year, a set of "Negotiated Principles" was published, in which environmental, industry, utility, consumer protection, and other stakeholder groups stated their concerns with the deregulation process and the conditions under which they were willing to lend their support to it. The Principles were seen as a guide to the introduction of competition and consumer choice to retail electric markets.

In December of 1995, a report called "A Prescription for Competition: The Restructuring of the Electric Industry" was published by the Massachusetts Senate Committee on Post Audit and Oversight. It was written in response to the DPU (Department of Public Utilities) order 95-30, published in August of 1995, which specified seven principles of the future restructured industry and five further principles to guide the transition to that restructured industry. The order also required public utilities to submit restructuring proposals by February of 1996. The Senate Committee's December report addressed the DPU order from the legislative point of view, listing numerous legislative actions required to implement the DPU's principles. It also made

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some additional recommendations on policy.

The year 1996 was mainly spent in the analysis of the five restructuring plans submitted by Massachusetts' electric utilities in accordance with the requirements of order 95-30. These plans were submitted in February of 1996, detailing the proposals of the Boston Edison Co, Eastern Edison Co, Massachusetts Electric Co, and Western Massachusetts Electric Co. The fifth plan was submitted by DOER as an alternative to the other four. In March of 1996, an inquiry designated D.P.U. 96-100 was opened for the purpose of comparing the five plans and selecting the best features of each for the final recommendation. This was published in May "to serve as reference point and to generate response and discussion." In October of 1996, the utilities filed new restructuring plans that took account of the May report, and in December of that year, the DPU presented Governor William Weld with a hopefully final "Electric Industry Restructuring Plan: Model Rules and Legislative Proposal," which formed the basis for the legislation the governor took before the State House in February of 1997.¹⁵⁸

Deregulation was approved in November of 1997, and finally implemented in 1998. The Massachusetts deregulation model has continued to evolve since then, particularly during the period after 2001, when the spectacular failure of California's attempt at deregulation triggered tempestuous debate in state legislatures across the nation. Evidence suggests that the two defining characteristics in the evolution of the Massachusetts restructuring plan in the years since the California energy crisis have been a very deliberate cautiousness with respect to changes in standard offer rates and a greater willingness to consider the rights of individuals and small communities, which may or may not reflect a holdover from the traditional New England culture of participatory democracy.

Bilateral contracts between retailers and wholesalers are permitted, and there is no "market clearing price," bringing Massachusetts closer to the Pennsylvania model. 10% of the pre-reform retail rate was cut starting in 1998, with an additional retail rate cut of 5% starting in 1999. Utilities are allowed to recover stranded costs through a surcharge,

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but only after all reasonable steps, including divestiture, have been taken to minimize these stranded costs. In other words, unless the utility could convince the State of Massachusetts that the divestiture would not help it recover any stranded costs at all, it was expected to divest of its generation assets before it can recover stranded costs through surcharges. As stranded costs are being recovered, the surcharge was expected to decrease in proportion, and at the same time, the standard offer retail rates, available through 2005 as an alternative to the competitive market service, would be allowed to creep slowly up, making the competitive retail rates increasingly more advantageous to the consumer. After 2, 5, and 10 years have passed since deregulation, the value of the utilities' stranded costs would be re-evaluated in accordance with market changes. The Massachusetts accountants have calculated (assuming low inflation) that this process would result in a final equilibrium of rates below those of 1996.

ISO New England is established to take care of the distribution. It allows wholesalers to offer electricity for sale to retailers throughout the New England states. The idea is to promote competition among wholesalers, helping retailers stay profitable even with the rate cuts. A "standard offer service" is offered to those consumers who do not wish to buy power directly from a retailer throughout the transition period, after which those who do not pick a retailer will be supplied directly by the distribution company, at what could be higher than the market rate (distribution companies base their default service rates on the cost of wholesale price bids, but the retailers often make a better deal with the wholesale power traders than the distribution company, which is, after all, mainly in a different line of business.) In addition, the standard offer rate slowly increases through the transition period, weaning the consumer away. During the transition period, any consumer frustrated with the retailer he or she has chosen can return to the standard offer service within 120 days after joining up with the retailer, or within 180 days after joining an aggregation (aggregation is a co-operative of many consumers, whether organized by community or otherwise, who purchase electric power as a group in a bid to secure a lower rate.) After the specified period is over, the consumer can switch to another retailer or get the default service from the distribution company, but cannot get the standard offer service again. After 2005, the standard offer service will no longer be available.

The Massachusetts deregulation experience can generally be characterized as positive but slow, at least as far as the residential customers are concerned. In July of the year 2000, the Commonwealth made an effort to increase the speed of transition by tying the standard offer more closely to wholesale prices, but the general effect on the rate of customer participation has been negligible. The main problem seems to lie with the glacial speed at which the standard offer is growing. A lot of venture capitalists seeking to invest in the electric power sector look at Massachusetts and decide it just isn't worth the capital outlay.

3.2.3 Massachusetts Technology Collaborative

Here we describe the programs of the Massachusetts Technology Collaborative (MTC) and how they create environmental sustainability. The MTC is a good example of the Ecological Modernization discourse since they are very in favor of business, they move around large amounts of money and favor market forces, they also work toward a more sustainable industry

The MTC is a state development agency working for renewable energy and innovation economy. The MTC deals with avenues of activity which cover 25% of all jobs in Massachusetts. It administers the John Adams Institute (a policy think tank) and the Renewable Energy Trust.

The MTC is an important part of the deregulation process in MA since it allows the government a small amount of influence over the way the industry is moving through policy development. The MTC allows for moving towards a more environmentally sustainable future and hopes to help the citizens of Massachusetts understand the deregulation process better through education.

Renewable Energy Trust

The Renewable Energy Trust is set up by the Massachusetts Technology Collaborative to support the following four programs discussed below:

- Clean Energy Program: This sub-project seeks to increase the demand for, and the supply of, renewable electric power.

- Industry Support Program: The purpose of this sub-project is to accelerate job growth in the renewable energy industry.
- Green Buildings and Infrastructure Program: Promotes renewable energy technology in buildings.
- Policy Unit: Addresses market and regulatory barriers to renewable energy. Projects funded by the Renewable Energy Trust are included in Appendix 1

Clean Energy Choice

The crux of the Clean Energy Program is the Clean Energy Choice (CEC) initiative, which seeks to mobilize public demand for green consumerism which is accomplished through the following ways:

1. A consumer signs up for CEC. They must now purchase their electricity according to a plan where at least 15% of the energy is renewable, supplied by a certified renewable power generation facility. The facility can subdivide its certification into multiple Renewable Energy Certificates, so that each certificate covers a certain number of KWh. Some or all of the certificates can then be sold separately from the electricity, so that a facility which uses only fossil fuels can, if the management wishes it, be certified as a renewable energy generator if it purchases enough Renewable Energy Certificates (RECs) from generators that uses wind, hydro, or biomass power. This provides the industry tax, or financial, benefits.
2. The cost difference between the renewable energy and the equivalent number of KWh in a fossil-fuel package is listed separately on the CEC participant's electricity bill as a REC premium. Usually the difference amounts to between 5 and 15 dollars monthly.
3. For every dollar on the REC premium, up to a dollar is donated out of a special subsidy fund to the consumer's local municipality to be used for purposes of boosting renewable-source energy (this is called a Matching Grant). At the same time, another donation, also up to a dollar on every dollar

of the REC premium, is made to a similar project that benefits Massachusetts' low-income residents.

4. Provided at least 25% of the energy in CEC participant's electric power portfolio is generated through renewable means, the REC premium also becomes deductible from the participant's Federal taxes. This rule is similar to that for generators, in effect providing benefits to anyone who owns or buys electric power 25% or above of which is produced in REC certified generators.
5. As customers purchase the power covered by a REC, that REC is taken out of circulation on the certificate market – it is considered “purchased” through the premium the customer pays for green energy over and above the fossil-fuel costs. Because of this, fossil fuel generators are forced to compete with individual consumers for RECs.
6. Beginning June 30th, 2005, in municipalities where 3% or above of households participate in the CEC program, for every household that bought at least 50 dollars' worth of RECs, an additional one-time grant will be given to the municipality for energy improvement projects.
7. The fraction of the money spent on REC that is matched with a grant from the Renewable Energy Trust is determined by how much of the REC premium of a participant goes to pay for a new REC, defined as generation capacity that had not existed before deregulation, and, conversely, how much of the premium goes to remove pre-deregulation renewable generation capacity off the REC market instead. Thus, a participant who only buys old, pre-deregulation RECs will still get some of the premium matched by the Trust grant, and is still eligible for tax deduction, but the more of the RECs he or she has purchased are new, the closer the fraction covered by the Matching Grant of the premium will come to 100%. Fossil-fuel using generators who purchase RECs can re-sell them to customers if they wish, but the public will know that unless the RECs come from a post-deregulation expansion of renewable generators, a smaller fraction of their value will be eligible for the Matching Grant. Because of this, an REC from a newly added green

generation capacity will presumably enjoy greater demand from CEC participants than a resold REC.

Massachusetts deregulation law requires all generators to purchase new RECs covering at least up to 1.5% of their generation capacity. Since this requirement cannot be met simply by buying up old RECs that existed before deregulation, it means that, effectively, renewable energy facilities now have the demand to expand their capacity up to at least 1.5% of all energy generated in Massachusetts. Any generation firm failing to meet this requirement for REC ownership is fined, and the fine money is paid into a fund to promote innovative green-energy technologies. The percent of total output which the law requires a generator to produce using renewable power sources is expected to increase steadily in the future, reaching 2% by 2005. This will obviously create excellent capital-raising opportunities for renewable power generators; any banker to whom they apply for a loan will be certain that the demand for their output will increase in the near future.

Since every purchase of a REC removes it off market, the more new RECs Clean Energy Choice participants purchase directly, the more new green-energy generation capacity fossil-fuel using generators are forced to pay for, so that, unless the generators prefer to simply pay the noncompliance fine, the actual number of new certified green-energy power plants in the state of Massachusetts actually rises beyond the minimum required by the Renewable Portfolio Standard. This, of course, makes renewable energy more widely available and increases the opportunity for a customer to buy it. The Commonwealth hopes to create a “virtuous cycle” of participation, which would draw in R&D money from private sources as the demand for more green electricity creates increased competition among the generators.

3.3 R&D, Efficiency, and Retail Prices

Participating in the Clean Energy Choice initiative is intended to serve as a morale boost for the participant, providing a satisfaction similar to that of donating to a charity. This will make it more likely that the participant will not perceive the added costs of buying green electricity as a burden. In addition, participation in the program serves as a multiplier of the certified generator’s profit, doubling the income of a green

electricity provider and making it easier for its owners to raise funds and meet their financial obligations. Even though the Matching Grant money does not go directly to the generating firm but rather to the municipality where the CEC participant resides or is based, the generating firm is still aided by it, since participation of customers in Clean Energy Choice increases demand on the part of fossil-fuel using generators for new RECs to replace those removed from the market by participating customers.

It is clear that in its profit-multiplier capacity, the Clean Energy Choice is a distortion on the market, intended to make investment in renewable energy seem more profitable than it would be in a purely unsubsidized environment. This can have the effect of increasing the rate of R&D investment in new and more efficient green-generation technologies, since potential investors will likely perceive them to be more profitable than they would in a free market situation. On the other hand, providers of green generation technology could potentially spend less on R&D under the conditions of the CEC program, considering that even with a less efficient generation of equipment they would still be getting profits higher than the current market value of their product warrants.

This last possibility is a particular concern, since the owners of renewable power facilities know that Massachusetts deregulation plan requires the Renewable Portfolio Standard to grow through the years, assuring the REC certified providers a sort of “captive market.” Also, the size of the payout the municipalities receive from the Matching Grant depends on the premium which the Clean Energy Choice participant agrees to pay. Since the municipalities receive the money for the stated purpose of boosting green electricity generation, which means that eventually it will still find a way to green electricity providers, this creates a potentially dangerous situation when the more renewably generated electricity costs in comparison to fossil-fuel generated electricity, the easier it is for REC certified electricity providers to obtain funds for new projects. Thus it could be said that the Renewable Energy Trust is creating a disincentive for the REC certified facilities to make their power cheaper, or at least to sell it cheaper. This could create a lag between the efficiency-driven decrease in the price of electricity generation in a green power plant, and a corresponding decrease in retail prices. Under some circumstances, it might be possible that this discrepancy may cause growth in

customer acceptance of green electric power to plateau, or even decrease.

This last scenario is not very likely, however. Great social demand for investment in green technology R&D (much greater than the economic demand for green energy itself) is definitely present in the Massachusetts population, and strong government incentives to improve efficiency are likely to remain a fundamental cornerstone of the Commonwealth's green-energy policy for the near future. As an example, the same deregulation program that mandates a 1.5% green energy component in a provider's power source portfolio also provides tax incentives for REC certified facilities, intended to spur R&D investment in generation efficiency. The desire for tax breaks will be further augmented by capital from large energy trading concerns, which remain economically motivated to invest into more efficient R&D generation technology as a hedge against the volatility of fossil fuel prices. Such hedging is not a large fraction of their current expenses, and it might prove an energy concern's lifesaver on the day when renewable generation may no longer be an environmentalist luxury but rather a vital tool of economic survival. Such investment in technological innovation is likely to result in a decrease of green energy generation prices whether or not the Clean Energy Choice program itself provides a disincentive to decrease them.

Due to these factors, the efficiency side of renewable generation will continue to improve. If at least some of the capital flows and tax savings are re-channeled into designing, building and installing a new generation of equipment, as they likely will be, the price of generating a kilowatt-hour of green electricity will decline as a direct consequence of the increased efficiency. As for the retail prices paid by the green electricity user, in a deregulated environment such as Massachusetts is becoming, where competitors constantly seek to undercut each other, the retail price of green electricity will likely follow the decrease in generation costs. As costs of generation go down, one green electricity provider will lower prices, trying to gain its competitors' customer base and forcing others to follow suit. This will keep the RET premium increasingly more likely to decrease than to maintain its levels or rise.

Ironically, even with the incentives provided by the Renewable Energy Trust and the tax deductibility, at present most Massachusetts consumers do not feel that paying 5 to 15 extra dollars a month for electricity is worth it in their particular case, no matter how

much they might approve of the principle in particular. Because of this, the perception within the renewable-energy business community is still very much that of an uphill struggle that they are facing in competing with fossil fuels: the “captive market” provided by the Renewable Portfolio Standard required in the Massachusetts deregulation code is accurately perceived as inadequate by the economic rationalists (though a great improvement on the previous situation).

Some businesspeople in the green electric power community even perceive the RPS as a handicap in the industry’s efforts to attract retail customers, because it gives consumers the false impression that green energy generation is an artificially sustained technology that would not be able to survive at all without the constant maintenance of state-imposed “hothouse conditions.” This prejudicial perception dissuades retail consumers from trusting a technology that they consider experimental and unreliable. Aware of this negative perception of their sector, green electricity generators seem to realize very well that without being able to compete with fossil fuels dollar to dollar, discounting outside support from the government, green electricity won’t penetrate the market to any significant degree.

Industry Support Program

In partnership with a Brookline, MA venture capital firm, Commons Capital, the Industry Support program of MTC manages a \$15 million Green Energy Fund, which invests equity venture capital into Massachusetts renewable energy generators. Commons Capital provides a financial perspective on the fund’s ventures, determining which investments are most likely to justify the resources spent upon them by growing and thriving, while MTC assesses the project’s likely benefits to the efficiency, penetration, and consumer acceptance of renewable electric power generation.

Another project, named Sustainable Energy Economic Development (SEED), seeks to find undeveloped technologies for the Renewable Energy Trust to invest in and assist in getting to the marketplace. The candidate company competing for a SEED award must have an intellectual property or a technology that is key to more efficient and economic renewable electricity generation, but must somehow be unable to attract sufficient venture capital on its own. Seed capital is awarded on a competitive basis, in

the form of a convertible loan, in amounts ranging up to \$500,000; all awards are given for the development of this particular technological product, helping its realization past the critical stage between the laboratory-focused R&D and the finished product which the company can offer to the customers. Debt service on SEED funds is deferred until such time as the company begins to earn product revenues. MTC expects the recipient to secure the matching amount of investment funds within 270 days after appealing for the award, and all matching funds must be used specifically for the development of the product specified in the MTC award.

3.4 Interview Analysis

We interviewed seven subjects in the course of this project. As stated in the Methodology, each subject was asked a series of questions, and then was encouraged to elaborate. After tabulating the responses to the questions in the five discourse categories, correlations and non-correlations were observed. The subjects' identities will remain confidential, only a general description of their job titles will be given. Herein each interviewee will be referred to as subject1-subject7.

The first subject is a government administrator who managed the process of writing the regulations for the Renewable Portfolio Standard; the second is a Teacher who is a political organizer for the libertarian party; the third is a Clean Energy advocate; the fourth has a management position in a state office and deals with environmental impact; the fifth is a retired teacher, businessman and inventor; the sixth is an engineer in the electric power sector; the seventh is an advocate who works to decrease electric usage through demand-side-management. We chose these subjects for their diversity of life experience so that we would get a breadth of opinion. Due to time constraints we were only able to interview seven subjects.

Throughout the interviews one point that kept coming up was whether the subject believed that government action should be taken to improve the current lack of renewable generation capacity. Subject 1, the government administrator, stated that he thought that more government involvement was prudent (AR). He believed that the government needs show better leadership in promoting more environmentally and economically

sustainable energy and that there needs to be a supervision plan in place to insure that the policies that already exist work (EM). Also he believes that the government needs to have a clear message when it comes to the importance of renewable energy. Subject 2, the teacher and political organizer for the Libertarian party, takes an opposite view. He believes in the privatization of government (ER). He stated without the government meddling in the production and distribution of electricity, supply and demand will take care of the problem. Subject 3, the Clean Energy advocate, believes that the federal government currently doesn't have a stand on the issue and it should. She would like to see more support of research and development and of renewable energy generation (EM). It was mentioned that she thinks that the city of Worcester should be more serious about energy conservation and believes that the city should purchase a portion of there energy from renewable generators. Subject 4, the manager dealing with environmental impact, takes the position that competition in the electric power sector needs to be enforced by the government (EM). Subject 5, the retiree, believes that a government regulated monopoly is in the public's best interest because electricity isn't a commodity (AR). Meaning that there needs to be a relationship between the supplier and the costumer in the electric power sector because if companies treated electric power as a commodity and charged what the market could support then lower income households wouldn't be able to afford it. Subject 6, the engineer, believes that National Grid could better compensate for changes in energy demand before deregulation (AR). Subject 7, the demand-side-management advocate, believes that the government should invest in technology that is almost ready for "prime time" (EM). She also thinks that government regulation has a positive effect on companies' resourcefulness.

On the topic of public support for renewable energy, Subject 1 feels very strongly. He is frustrated and thinks that citizens should do more to improve the current lack of renewable energy (DP). He states that it is misleading when people say that they would be willing to pay more for renewable energy in surveys. Subject 1 also commented that it is easy for people to agree to support in a survey, but it is much harder actually getting them to sign up for it. He mentions that it is a lot of work for the private citizen to find a renewable energy provider (ER). Subject 3 strongly believes in public support for renewable energy. In her career she is actively approaching private citizens in order to

promote buying energy from renewable energy providers (DM). Subject 7 believes in the ingenuity of consumers. She cites an example about how Californians independently cut their usage of electricity during the energy crisis (DM).

Three of the seven subjects mention that a partnership between government and industry is beneficial. Subject 1 talked about a solar company that could not raise the necessary funds to bring efficient low cost solar cells to market. He said that they were able to get the money that they needed from a government grant (EM). He describe the solar company's and the government's partnership as important. When asked, Subject 3 agreed that it is beneficial.

All but subject 5 believed that competition in the electric power market helps in promoting the renewable energy market (ER). Subject 1 gave an example that some large companies have become interested in wind generation because they appreciate the absence of large price fluctuations of the kind that happened with fossil fuels (ER). He also stated that vertically integrated monopolies will only do what is needed to comply with regulations, but a company that is competing for retail customers might have an incentive to do better in order to get more of a market share (ER). As a libertarian Subject 2 believes that direct competition is the best way to improve problems with the system. He said that one of the reasons for the California energy crisis was that energy was purchased from the highest bidder instead of the lowest. In that system, he said, the natural forces of supply and demand weren't aloud to function properly (ER). Subject 3 thinks that renewable energy has a better chance of success under deregulation. She believes that it is economically sound because being renewable it has the advantage of price stability (ER). Subject 4 stated his belief that the government is limited in its ability to solve the problem of green energy. He stated that "deregulated market is working", although "newcomers are not coming in as aggressively as we'd like them to." (ER) Subject 5 disagrees. He believes that a regulated monopoly would be better than in open market (AR). Subject 6 states that if the government let the price of energy to spike then new suppliers would come in and stabilize it at a lower level than prior to deregulation (ER). Subject 7 said that consumer demand needs to be created to solve environmental problems (EM). She said that the generation of electricity is much more subject to market forces after deregulation. She believes that the new system is better (ER).

Four of the seven subjects state the importance of educating the population about renewables. Subject 1 stated the need to increase people's involvement in renewable energy. The only way to get the word out about renewables is by educating the population. Subject 3 stated that education is important. Subject 7 educates people on the advantages in demand-side-management in her career.

Subjects 1, 3, 5 and 7 all have comments that fall in all five discourses. Subject 6 has comments that fall in only the categories of Administrative Rationalist and Economic Rationalist. Subject 1, 3, 4 and 7 are all in favor of competition, yet the majority of their comments are not contained in the Economic Rationalist section. Subject 2 is clearly a pure Economic Rationalist, Subject 5 an Administrative Rationalist/Ecological Modernizer (he talked extensively about the ability of less wasteful technologies to solve the emissions problem, but favors the regulation of regional monopoly utilities over the current deregulated system.) The responses of Subjects 1 and 4 shows the general profile of the Ecological Modernizer, those of Subject 3 are split evenly between the Ecological Modernizer/Economic Rationalist discourses, and those of Subject 7 trend toward Democratic Pragmatism. Subject 6 appears to be an Economic Rationalist in those responses that deal with the current state of deregulation, but he seemed an Administrative Rationalist when he talked about his job on the old regulated energy grid.

Subjects 1, 2, 4 and 6 all showed great frustration with the deficiencies of the current deregulation scheme in matching supply to demand and the distortions imposed on the emerging electric power market from the outside. Subjects 1 and 4 both talked about the difficulty of obtaining site approval interfering with the ability of wind generation projects to attract investors. Subject 2 said that deregulation is often merely an excuse to implement a different type of regulation that benefits only special interest groups but creates no true market. Subject 6 also bemoans the inability of green power projects to attract investors. Subject 7 talks about the opportunities to educate the public about energy conservation that are often abandoned when deregulation plans are approved, and the inability or unwillingness of the private sector to take steps towards more efficiency and cleanliness even after environmental problems do arise. Subject 3 expressed frustration with the private sector's irresponsible mismanagement of natural resources. She expressed regret that private companies do not wish to be known for

green innovation, since this earns them negative publicity if they fall short of their leadership position later. Subject 5 complained about the complicated nature of the current deregulated market, saying that it was too much effort for people to decide. It is interesting to note that Subjects 1, 2, 4, and 6 complained mostly about the difficulties of the current market under its present constraints, while 3, 5 and 7 complained most about the shortcomings of the private sector.

4 Conclusion

There are three separate issues discussed in the conclusion and one is how everyone is part of the same puzzle and although they have disagreeing points of view they usually have common goals in life. It is important that every person does not just adhere to one discourse but they adhere to multiple discourses, so people can have a common ground with which to stand on in talking to others. Another point to our conclusion is the solution to having the discourses working together and an example or two on how this can be done and the benefits of doing so.

4.1 Policy and Discourse Conclusions

After analyzing Massachusetts policy and the events that occurred in California, we have compiled our conclusions on how each discourse can be better suited by working together in the electric power industry and policy making regarding said industry. First, we discuss policy decisions and what they need to work, how the legislation regarding deregulation is insufficient, and policy decisions that do work. Next we talk about how green energy is being held back and what defines a successful victory, meaning one that will be long lasting and satisfies each discourse. Next we discuss each discourse and what we think they need to do in order to join together with all the other discourses in order to make a more environmentally sustainable future.

4.1.1 Policy Decisions That Work

From our research into the successful and the not-so-successful electric power deregulation policies pursued by Massachusetts, California, and various other states, and

from the interviews we have conducted with an assortment of subjects, we have come to a set of certain conclusions specific to the Massachusetts situation, namely:

4.1.2 Legislating Deregulation Is Insufficient

Legislative plans and statutes mandating deregulation are only part of the required reforms. In Massachusetts, different parties we have interviewed have all expressed a degree of frustration with the initial promise of a deregulated generation market compared to the final outcome. A common theme in subject responses has been the lack of residential consumers sufficiently motivated to make the switch to alternative electric power providers, even when 70% of people being surveyed have stated on at least one survey¹⁵⁹ that they would be willing to pay an extra premium for the use of environmentally sustainable energy sources. It appears that either the information on green energy choices is not getting through to most consumers, or their motivation to make the switch is lacking: the consumers do not appear willing to make the effort to locate green energy providers and make the required arrangements (even when these arrangements are simple to those engaged with the issue.) In either case, whether it is the lack of information or the lack of motivation, or both, the slow rate of consumer switchover from the standard offer has shown that the problem needs to be tackled across a wider field than simple legislative statutes.

Green Energy Is Held Back By Financing And Siting Bottlenecks, Which In Turn Stem From A Perceived Lack Of Short-Term Benefits.

The customers, the business community, the local municipal governments and city councils, and institutions of education and public recreation all need to be involved if the deregulation plan is to produce lasting changes, and if the new “green power”

¹⁵⁹ Synapse Energy Economics with the Mass Energy Consumer Alliance, available on: www.synapse-energy.com

technologies are to achieve greater penetration of the Massachusetts markets. A large amount of information sent out by agencies, whether government or volunteer, who advocate sustainable power, goes to people already interested enough in renewable energy to seek out the information: in effect, preaching to the choir. Moreover, renewable energy generation projects in the planning stage continue to depend on state grants and subsidies to be carried through: a bottleneck which limits the amount of choice available to consumers and increases the number of bureaucratic obstacles that lie between a proposal and a successful company. Even though the requirement of the Commonwealth government has produced a new market for renewable energy certificates, the major financing institutions are reluctant to invest money in renewable energy, reasoning that what the government gave, the government can take away, and not wishing to bear the risk of the certificate market vanishing. This, in turn, reinforces the aforementioned dependency on grants from the Commonwealth. In the end, there are fewer projects, they take longer to build, cost more (and thus recoup the costs slower) and are less visible to the average consumer.

A Successful Policy

A successful policy will be perceived as a victory by all five dominant discourses. The solution to the vicious circle described above is greater involvement by all the communities mentioned above. Culturally, we believe, on the basis of the interviews we conducted, that most of the people involved in electric power sector restructuring in the Commonwealth of Massachusetts are more inclined to the Ecological Modernizer discourse than to any other; this often results in arguments and plans that appeal to the adherents of this discourse, but not the other major four. A successful deregulation policy, one that involves the businesses, the volunteer organizations, the municipalities, the schools and the town meetings to get through to the consumer, needs to appeal to all five major discourses, and to provide tangible benefits to consumers who adhere to any of the five. In other words, any successful plan for the creation of a new, competitive, green power market needs to be so worded and so structured that the adherents of all five major discourses can interpret it as a victory for their side.

Economic Rationalists Need To See Recoupability

In order for green power to gain greater acceptance from financing institutions,

the two major discourses that need to come on board are the Economic Rationalists and the Democratic Pragmatists. The current position of Economic Rationalists is one of distrust: they see the market for renewable energy certificates as having been artificially created by government decree, and remain unwilling to advance funds to new renewable-generation projects for fear of that market vanishing when and if the government policy might change.

This distrust could vanish if it could be shown to the financiers' satisfaction that the new installations can produce not only green energy certificates (a product demand for which depends on the government requirements for firms to comply with Renewable Portfolio Standard mandates) in addition to an affordable and reliable supply of electric power, delivering it to the market at rates consumers are willing to pay for. This would mean that renewable generation would no longer carry the label of intrinsic risk for investors. Instead, it would draw Economic Rationalists, who will now be free to appreciate the public relations capital that support of renewable generation projects will bring their backer, the low operating costs of such an investment, and the stability against fluctuating fossil fuel prices that can be provided by having even a small section of a firm's generating assets operate independently of fossil fuel supply.

To convince financiers of this proposition, the business community must be involved in the implementation of energy policy at every level, so that people with real education in economics and finance, who wield real influence in investment and banking circles will have a chance to see for themselves that the technology can be profitable as it is, or as it will shortly become. A number of proposals seeking such an outcome will be discussed in the later sections but just to provide one example, the businesses operating in a given community could be allowed to underwrite the green energy premiums on the electric bills of local citizens who agree to switch to green energy providers. In exchange for this sponsorship, the businesses would be able to use this fact in advertising, not just in this particular community, but throughout Massachusetts, presenting themselves to the public as leaders of the sustainability movement. The public relations capital the businesses will gain through such a coup may very well outweigh the costs of underwriting the premiums, since the PR benefits will extend across Massachusetts while the underwriting of green energy premiums only needs to happen in one particular

community (of course the government can provide further incentives, such as tax breaks, to businesses who underwrite more premiums than others.)

In addition, the Commonwealth tax structure should favor banks that provide loans to new and sustainable generation projects. An equitable scheme should be worked out whereby a new generator can gain access to the distribution grid in return for a simple fee paid per month, with the costs of providing that generator with grid access to be financed in the long term by loans made by various banks. The interest rates on such loans would be managed by the Commonwealth government permitting banks to deduct these loans off their taxes if the interest was sufficiently low.

The Democratic Pragmatist Discourse Would Gain From Empowered Communities.

In turn, a scheme that involves communities in generating renewable energy to power that community's schools, churches, community centers, municipal offices, the local Boys and Girls Club, and other such local lynchpins of community identity, can attract Democratic Pragmatists seeking to empower their communities against outside control. Any electric power in excess of that needed locally could be sold to the grid and the profits used in achieving some project the community votes on: since it is more efficient to run a large turbine than a small one, we can expect the availability of such excess electric power for sale to be not infrequent. Potentially, the effect of such a project, involving the community on many levels to achieve a goal of common benefit, will make the participants realize that green generation project is an immediate help to all of them. The success of the project will become a priority for people who formerly could not care less: everyone will now be a stakeholder. Since the revenues of a town or city are largely credit-worthy, it will be easier for a town to gain access to private funding than it would be for a startup business – and since whatever municipal moneys are allocated for the project will need to be recouped, communities that try these projects will likely seek out in the latest technologies and most efficient sites to maximize the chances of success. The participation of citizens, assembled directly in a town-hall style meeting, will also effectively resolve the various protests and objections of the sort currently used by pressure groups to prolong the bureaucratic wrangling when a new generation project must be approved.

Such a scheme can also aid in demonstrating the potential efficiency of renewable generation to Economic Rationalist investors: if a town can generate power in a renewable way, supply its local needs, and make money by selling the excess onto the larger grid, this would demonstrate renewable power's commercial viability, encouraging financial firms to advance funds to private entrepreneurs interested in doing the same. Of course if many communities become green power producers, this will have a double effect. First, it will diversify the Massachusetts energy market – perhaps by encouraging aggregation firms to form, which would purchase the excess power generated by many different communities, pool it together, and sell the power to industrial and residential consumers elsewhere. In addition, the adoption of this plan by a number of communities throughout Massachusetts will have the effect of increasing the number of green energy providers available to consumers elsewhere to choose from. Demand for photovoltaic panels, biomass converters, small-hydro and wind turbines, wave-power gyroscopes, and other such technology is expected to increase under such circumstances, which is likely to lead to improved designs and lower costs.

The Green Romanticist Discourse Enjoys the Increased Public Awareness of Sustainability

The community-based approach described above will necessarily involve public discussion; it will also involve the community on a basic level, ranging from the local middle school's wind turbine being used by the teachers in the school's physics and earth science) lessons, to individual citizens researching the best photovoltaic panels manufacturer to propose buying from them at the next town meeting. This degree of individual involvement will gratify the Green Romanticist point of view, since it will finally make the public aware of the advantages of green electric power on a grassroots level, something adherents of the Green Romanticist discourse have been trying to achieve for decades. The public awareness of sustainability issues that the individuals involved would gain in the field of electric power consumption will often lead these people to re-examine their lives with respect to other matters – if a person sees himself or herself as an proponent of clean electric power, this person will likely find it psychologically difficult to reconcile such behavior with, say, driving a gas-guzzling vehicle.

The Administrative Rationalist Will Be Gratified By the Active Role of Government

Although the government will seek to empower competitive free markets as much as possible, and encourage the emergence of new generators and the active participation of the business and venture capital community in the financing of further sustainable generation projects, it will take an active role in the matter, taking deliberate steps to modify tax structures and providing incentives for municipalities and private firms to reach a clearly delineated goal. This will assuage opponents of deregulation, such as those adherents of the Administrative Rationalist discourse who assert that by removing the government from control over generation of electricity, the Commonwealth is losing a vital restraint against human greed and short-sightedness. By letting these people know that the role of the government in shaping the future of electricity market is still pervasive, and that though the government is now using free-market competition to achieve its goals, the staff of experts working for the government are still guiding the economy to achieve maximum sustainability, the Ecological Modernizers implementing the deregulation will at least give the Administrative Rationalists a chance to make peace with the new reality.

4.2 Example of a Solution

In this section we discuss one possibility of a solution that could be used by the electric power industry. First we discuss the events occurring now in the electric power industry with respect to generation distribution and its effects it has been having on the economy. Then we introduce our new distribution system for generation. We discuss the environmental impact of this solution, the social impact of this solution, individual attitudes towards this solution and finally we express additional arguments for this new distributed type of generation. Lastly, we discuss the way each discourse would see this new type of generation and how it would be beneficial to each discourse.

4.2.1 Assumptions of the Regional Monopoly Paradigm

Originally, electricity was believed to be a typical example of what is known as an economy of scale.¹⁶⁰ The belief was not as obvious as it seemed to the people who held it: from a modern perspective it is clearly derived from a set of some very specific assumptions.

The first assumption was that of fungibility. According to the supporters of this view, since one electron is very much like another, and since any electric current, no matter how it is generated, can drive an electric motor provided it has the amperage and the voltage to do so, this means that electricity produced in any one context is qualitatively indistinguishable from that produced in any other. The social, environmental, economic, and other effects of producing this particular electricity, as opposed to any of the possible alternatives, were mostly not so much ignored as rather sadly discounted at the time -- although to us today, it is obvious they are as much a product of the generating activity as electricity itself. Electricity was considered to be a fungible good, and as such it made sense to reduce the costs of producing it as much as possible by reducing the overhead.

The second assumption dealt with ways of reducing this overhead. Essentially, the electric power generators of the time were all based on Faraday's dynamo principle: by spinning a coiled wire wrapped around a ring past a magnet, magnetism is transformed into electricity and the electrons begin to flow down the wire. In other words, the efficiency of the electric generator is limited by (among other things) the efficiency of the rotation.¹⁶¹

¹⁶⁰ A phenomenon which encourages the production of larger volumes of a commodity to reduce its unit cost by distributing fixed costs over a greater quantity.

¹⁶¹ It's obvious that when dealing with a rotating body, its main source of inefficiency is the energy lost through friction. The phenomenon is analogous to the rolling friction of a wheel on the ground, and its coefficient of friction is μ_r , with the formula for the energy of friction being: $F = (\mu_r) / (r * N)$. Where r is the radius of the rotor and N is the force normal to the direction of friction (in other words, the force of the surface against which the wheel is rubbing pushing back on it.) F operates from the center of the rotor and in a direction opposite that of rotation.

Because of friction considerations, a smaller generator would not be as efficient in its rotation as a larger one, and so it made sense to have generators built as large as possible. In addition, of course, the advantage of having one very large generator as opposed to many small generators is in the manufacturing cost: it is easier to build only one of something. This made engineers and power plant stockholders seek to improve the efficiency of their generators by expanding their size.

Since electric power cannot be stored effectively (at least not as electric power), this meant finding use for all the power generated by these large machines required very large markets. This in turn led to the perception that, given that electricity was fungible anyway, and it was impossible for one producer to make the electricity coming from their generators intrinsically better than the amperes coming from their competitor's, it would be most efficient simply to divide the regions between producers, granting each a state-supervised monopoly in a particular area. This development set in the electric industry's subsequent pattern of very high starting costs and extremely low variable costs (once the giant generators are spinning, they can pretty much go on spinning, and all alterations in their regular regime are avoided as much as possible.)

The emergence of regional monopolies was not predetermined by the nature of electric generation but resulted from some very specific assumptions made by the persons deciding federal, state, and company policy during this period. The rise of the utilities model came from the cross-fertilization of the fungibility assumption with the assumption that the most important part of generator efficiency was the avoidance of friction losses.

Rotational friction is less than sliding friction because a large fraction of the friction force vector gets re-directed by the shifting position of the wheel. (Think wind vector pushing on a sail; then think of a shroud line snapping so the sail goes in the direction wind is pushing. The amount of force that is distributed to the forward motion of the ship is nonzero, but very small. The same thing happens to the frictional force pushing on a rotating wheel).

If we assume that each revolution of the wire coil equals a certain amount of energy lost to friction, since a very large generator will have a single point on its surface make fewer complete circles per unit time, this would imply that it experiences less friction – and given the same amount of energy used to spin the two generators, it is obviously more efficient to spin a large one fewer times than a small one more.

4.2.2 The Inaccuracies of the Regional Monopoly Paradigm.

The first inaccuracy to consider is that the only way to reduce friction-caused inefficiency is through up-scaling the generator to be slower and more ponderous in its rotation. There are actually a substantial number of ways to avoid friction-related energy loss -- ways that are actually made easier if the generator is smaller in dimensions than the typical utility behemoth.

1. The first technique lies in simply reusing the heat of friction, so that it is not lost, and is thus counted as an asset and a benefit instead of a waste.

If the electricity is being generated with a gas turbine as a prime mover (as most new thermal power plants are), the heat energy can be used to run the gas compressors for the turbine cycle (a combined cycle), allowing efficiencies of up to 60%. If the electricity is generated on-site at a factory, or some other installation that needs heat for some other useful process (for example a school that needs both electric light and central heating), the efficiency of the total co-generational process can reach as much as 90%. This spike in efficiency can enable a factory to beat the giant power plant at its own game: generate the electric power it needs on-site, and then sell the surplus onto the grid at cheaper, advantageous retail rates, since it does not have to worry about recouping much of the giant plant's friction losses. In fact, recent advances in microturbine technology for power generation have created manufacturing lines of turbines that need no lubricants, have so few moving parts that they can run unattended for months on end, and, when used as dual generators of electricity and useable heat, achieve nearly the theoretical maximum of thermal efficiency allowed by the nature of the technology.

2. The second technique of beating friction-derived inefficiency is through the use of modern materials and computer-aided design in the initial construction of the turbine.

Certain modern materials – one of them, under certain circumstances, is

the ubiquitous and cheap graphite -- possess a recently discovered property known as “super-lubricity,” which means they are all but immune to the effects of friction as exhibited in most other materials: as far as it is possible to determine by modern measuring methods, their coefficient of friction is 0. An additional number of various materials are not exactly at that level, but their friction is still very low compared to common metals that go to make up a generator. Such substances can be used as coatings on any rotating machine parts, vastly reducing energy loss due to friction – of course some energy loss will remain, but it will be so miniscule that the size of the generator will make no significant difference.

Naturally, we must realize that a generator half the size of those preferred in the days of regional monopoly will need a smaller amount of this anti-friction coating, saving its installer initial costs without sacrificing long-term efficiency. Under such circumstances, if the coating itself is sufficiently costly; it may be more profitable to have a smaller generator which takes more revolutions than a large one that takes up more coating costs. Under such circumstances, the old size considerations no longer apply: it may very well be just as efficient for a plant owner to have three smaller generators running in parallel, whose total area to be coated is equal to the size of one large one!

Another way for turbine-driven generators to beat friction is through innovative turbine design. In the past half-century, the modern science of computational fluid dynamics has advanced far beyond the simplifying formulas used by classical mechanics to design turbines. This has revolutionized turbine design over the past forty years. As is usual in such cases, the efficiency of a modern turbine depends on the extreme precision not only of the calculations, but of manufacturing as well. Any error in the slope of a surface curve would be magnified on a larger object, leading to greater deviation from the computer model’s predictions of flow behavior. This would mean that the precision requirements for a larger turbine would be paradoxically greater than for a turbine slightly smaller (like half the size.) Greater need for machine precision implies a greater expense in manufacturing per unit of turbine surface area. If the savings in efficiency that comes from computer-aided turbine design are great enough, it

might be again be cheaper to build two smaller turbines than a single larger one, and have each turbine drive a smaller generator.

3. Finally, there is the consideration of efficiency that goes beyond the turbine. Particularly burning questions in electric power efficiency are load management and optimization of transmission and distribution.

A large power plant needs to have its baseline generators constantly spinning, even in the dead of night when the power they generate is greater than the total immediate demand. If the baseline generators ever had to stop, the costs of doing so and then starting them up again and bringing them up to required speeds would be greater than the losses the power plant takes from leaving them spinning when the electricity goes unused. There are indeed additional tiers of temporary generators, -- the intermediate load and the peak load tier of generators -- which the large plants often use to meet hours of mounting demand in the morning and afternoon. But even when the peak and then the intermediate load generators are taken off-line during the trough in demand that comes after most potential users are in bed, the baseline generators must still produce power whether anyone uses it or not. Adding the intermediate and then the peak load temporary generators on-line and then removing them is inherently an inefficient solution, though of course it prevents the greater inefficiency of running the baseline machines at the afternoon levels of demand. But aside from the inefficiency of switching the intermediate and then the peak tiers on and off, the baseline generators must still maintain a supply greater than demand all through the night. Any generating company would welcome the chance to try a solution that matched supply to demand more closely, which is a reason why natural monopolies also grew.

Regional monopolies also have trouble with the transmission side of the electric power market. A transmission grid is optimized to deliver power to the consumer in the most efficient and least costly way achievable. It is obvious that this priority faces a serious constraint when the only way the grid can draw on electric power is through a few point sources, and the supply to large areas full of

consumers must depend on the long connection to the central plant, which may contain a long and tortuous chain of switches, bifurcations, and transformations, to remain uninterrupted. There are many potential failure points along that path, as the power outage that struck New York City in the summer of 2003 so clearly warned us.

If such a system of central generation hubs, high-voltage main lines, and transformation towers to damp the current down to retail consumption level is optimized according to the methods of old utility grids, the optimization is a rigid one where one particular way is clearly more cost-efficient and reliable than the others, meaning they are only designed to work in a specific direction. That type of optimization leaves the system with major problems when, say, one of the power plants wheeling its power through it needs to shut down in order to upgrade its generator technology to something that was not designed 70 years ago. Because of this, the central-hub sort of optimization has quite possibly held the installation of modern gas turbines in the industry back by decades. It is to the rigid paucity of possible optimums, and to the infamous if-it-ain't-broke-don't-fix-it mentality it nurtures in the regional power companies, that we still owe the continued operation of those old coal-firing plants that still chug along in the Midwest, plaguing the EPA offices of every state downwind from them. The cost of re-calculating all the optimizations and redesigning the distribution network must be added to the cost of actually upgrading the plant, retiring the old steam turbines, and installing the new gas-powered ones. Very often, the regional utilities put up a determined struggle against all outsiders that seek to force them into making such changes.

4. Of course when considering electric power, we must step away from the fungibility assumption, and consider the other products of the system that produces this electric power – namely the power's sociological, economic, and environmental effects.

The old central-station paradigm was really very similar to the medieval Chinese system of governing provinces. The utility is assigned a region where only the utility can sell electric power, much like a Chinese mandarin was

assigned a territory where his word would be law. The utility holds the monopoly on the sufferance of a higher authority, to which it must justify its actions, from a change in rates to the number of people in the region who have no electric power, the same way a Mandarin ideally had to justify his behavior and success in governing to the Emperor. The utility usually maintained a good relationship with the people to whom it provided its services, a relationship that often lasted decades and resulted in mutual respect and courtesy on both sides; the poor people who could not afford to pay for electric power were often provided that power anyway, at least enough to stay warm in winter and have their basic appliances running. Some of the people now living under the modern, recently deregulated system, with generation assets rapidly becoming more and more distributed, often speak of the old utility system with nostalgia for the old power company, which recognized that what they were selling is a service and a relationship, and not a commodity.

But there was a reverse side to that coin. After the cost of fossil fuels jumped in the early 1970's and the federal government passed numerous acts to combat air pollution throughout the 1960's and 70's, the costs and, correspondingly, the rates of producing electric power grew steadily. But without the benefits of a competitive market to drive innovation in operations, management, and technology, there was nothing to bring either these costs or these rates down again; up they climbed and stayed up, until they climbed even higher. The continuing explosion in suburban sprawl meant that more and more Americans were living a lifestyle that maximized their electricity consumption. And because one of the side effects of the power companies' regional-monopoly paternalism was to disempower the individual communities of their buying choices, and to make conditions of electric power service allegedly uniform throughout the monopoly region, the resulting effect contributed its part to the atomization of America's urban population. More suburbs grew, uniform, inefficient, and, in any but the wealthiest society on the planet, insanely expensive in terms of energy requirements. Even for the wealthiest society, they represented a considerable net loss that kept on growing from year to year.

Since the demand for electric power kept on increasing, since the prevailing paradigm of power generation believed only in constructing large power plants to take advantage of the economy of scale that lay at the heart of policymakers' assumptions regarding the industry, and since the construction of those power plants was now made more troublesome by the new environmental impact regulations, demand often outstripped supply, nudging the retail rates ever upwards. As mentioned before, once they went up, the rate tended to stay there. This was also due to a success in conservative efforts, partly due to sure capital costs.

Finally, as the demand continued to climb, increased strain was placed upon the distribution network, as the engineers maintaining it struggled to find ways to wheel power over to regions of highest demand through connections not designed for the post-urban-sprawl conditions in which the system now had to operate. The tariff costs – that is to say, the costs of transmitting and distributing electric power to consumers half a state or more away – grew to the point that in some states, the consumers were paying as much for distribution and delivery as they were paying for the actual energy.

The regional monopoly system was still acceptable to most residential consumers, since the overall generation process was so efficient that even with the rate and tariff increases, they did not truly feel they were paying an outrageous price. But the industrial power users, who used enough electric power that the new increases added up to some substantial operating costs for them, were growing restless. They felt that a new paradigm was necessary, which would cut costs for users and make electric power more reliable and less dependent on bureaucratic regulation.

4.2.3 Distributed Generation

Distributed generation assumes that, unlike the old days of central and immense power stations servicing a region assigned to them by a public authority (usually the state government), electricity can be more efficiently generated by distributing smaller but more modern generational assets across the region. A related, but not identical concept is

that of market deregulation: the belief that anyone who can physically produce electricity at a cost people are willing to pay should be able to get on the common grid and sell it on a free market.

The second idea follows from the first: since electricity is no longer seen as something best produced by an economy of scale, the most important argument for regional monopolies falls away, and it becomes harder to justify the actions of state government in granting customer blocks out to the energy firms it patronizes. Thus, although the distributed generation paradigm does not have to be used as an argument for deregulation, in the United States it mostly is. Since the whole point of distributed generation is for non-profit companies and local communities to make electric power as they need it (although there are many other advocates of distributed generation that hope it will energize small businesses) and then sell the excess back to the grid, it makes a more sense for a factory or the resident with some extra capacity in their gas turbine or wind generator to sell the energy to whomever they want. Usually the excesses sold by many small producers are pooled, or aggregated together before they are resold, a move that is necessary to cut the transaction costs of bargaining for energy. Because of this economic requirement, there is, in fact, an alternative to deregulation: the small producers can sell their excess only to the local utility, which would then pool the energy and sell it to some other consumer. But obviously this would bring up the issue of trade monopoly, which the United States society is much less willing to tolerate than a “natural” monopoly in production. Because of this, in those regions where distributed generation is widespread, the electric power industry is usually also deregulated, and the pooling is usually done by an independent aggregator company.

The details of how the access to the grid is to be financed for these multiple energy providers remains a topic to be discussed, and even the need for other providers than the regional utility may be debated, so in its pure form, the distributed generation paradigm consists of a purely geographical description. Rather than a small number of central hubs with spokes of high-voltage wires radiating out from them to branch into a web of smaller residential wire services, we see a distributed network of generating plants located all across the region, each plant small compared to the old leviathans but more efficient thanks to their quicker adoption of new technologies. This pattern of generation

enjoys numerous advantages over the old system of mammoth central installations. Since a corresponding fraction of a region's total generating power is present in every part of the region, such a distribution network could both be extremely flexible in the face of unexpected need for grid repairs, and much better suited to the task of matching supply with demand at any given hour of day or night.

Because the generators involved would be smaller, even if load management were handled simply by shutting down some of them when not needed, the size (that is, the mass) difference alone would result in a better match between demand and supply and provide for lower costs of warming the generators up and cooling them down. It is easier to achieve a match between two values if the units of power you add or subtract are on the order of 500 kilowatts rather than 50 megawatts. The main obstacle to the large power plants seeking to start and stop their generators to match demand is the thermal stresses it puts on the generators. But because the smaller turbines of the distributed-generation paradigm are more similar to the peak-load generators than they are to the base-load generators, and can thus better withstand thermal stresses; this gives them an advantage in being able to switch on and off at less cost to the operator.

But of course the distributed generation paradigm makes more elegant options much easier, with only the local demand to consider. For example, since a giant power plant must account for the demand of many different locales, while under distributed generation, each of those locales will have the power to make its own electricity; it would be much easier for a single community to determine exactly how much electricity it should produce during off-peak hours. No matter how thorough the central utility's surveys might be, as long as some of them have the proper training, or the assistance of people with such training, the residents of any given locale can estimate their individual community's needs more accurately if only because they do not need to lump many communities together in one giant estimate. Any emergency reserve generated above that local demand mark would be much easier to store that it would be if it was a giant reserve generated for many communities at a central location – with the local provider aiming to supply only a limited pool of potential local consumers, the total amount of kilowatt-hours to be stored would be much smaller, and this smaller power pool would be more amenable to storage in the form of potential, chemical, or heat energy.

And finally, with each individual community where this generation asset is located seeking to maximize its use, it would be much easier for local demand to change itself in order to better fit the supply. This would occur for at least two reasons. Firstly, any electric power produced by the generation asset but not used and not wheeled elsewhere would represent a potential energy benefit that local businesses would compete to gain. And in addition, if we assume the most likely case, where generation assets are not only distributed geographically but also deregulated economically, we will have a situation where, unlike a larger utility controlled by regulator approval, the smaller provider is free to set its retail rates to reflect the disparity in loads more accurately, charging extra for peak rates of use and providing lucrative discounts for off-peak hours. The improved price signaling would cause a growth in energy storage technology, some of which (storing electricity as heat, for example) are already very accessible, but not much in demand. The new rate regime would boost the rate at which customers decide that energy storage is something they are willing to pay for, giving market penetration a boost.

Here, it is also important to consider the role played by the distributed generation paradigm in the increased penetrating power of “green” generating technologies.

A very popular explanation for the failure of so many energy firms to adopt photovoltaics and wind power for primary energy production is the “natural” small scale of these two generating methods. The photovoltaic panels are limited in size by production costs and by the space they need to function profitably. Large wind-powered turbines are also limited in size, in this case by the stresses which the rotation of a large turbine’s immense blades puts on that turbine’s hub, as the rotational energy of the turbine is multiplied by the long blade acting as a lever. The resulting installations might have been enough to power a single residence or business, perhaps a municipal building. But in order to produce power in bulk and sell it to many different consumers, very large areas need to be set aside for photovoltaic projects, and a large number of wind turbine towers have to be constructed, with a single small turbine mounted atop each tower and each small turbine being wired to pool the generated power into a larger block – all of these factors adding greatly to the installation’s construction costs. In addition to the construction costs, the problems of simply obtaining sufficient open space was nothing to

take lightly – there was usually quite a number of developers competing for the real estate required, the profits of using this real estate for any number of other purposes would be likely to recoup the developer’s money in a much shorter time, and the costs that a power industry investor would need to incur in order to secure the space for a solar power plant or a wind farm would make the project quite prohibitive.

Because of this, when photovoltaics and wind power have been adopted in the days of old central stations, it was usually done, and most certainly usually perceived as being done, mainly for reasons of environmental concern, and not for such sound business reasons as the increased stability such projects would provide a generating enterprise against fossil fuel price fluctuations. Since most solar and wind installations were believed to be best suited for powering an individual small business or residence, most of the potential large-scale investors believed that these methods of generating power were uneconomical and inefficient. Even given the incentives which federal and state governments provided to utilities that invested in progressive methods of electric power generation, the response of utilities to these incentives had often been lackluster: they simply failed to see where the demand would come from, given the fact that most people were less than concerned about emissions or unable to express that concern effectively in policy or consumer decisions.

But if the electric power generation in a particular region switches over to a distributed generation paradigm, the former immense energy market that central power stations needed to serve is instead converted to many smaller, local markets, each of which can be served by a multitude of generating facilities. If we also assume deregulation, we have competition between the owners of these facilities added in, with each owner seeking to gain market share. Under such circumstances, gaining a measure of stability against volatile fossil fuel prices is particularly attractive, aiding the penetration of green energy. But even if we do not assume complete deregulation, but instead postulate a somewhat less likely situation where multiple power producers sell their excess power to the utility at predetermined rates, we still have a situation where there are many small generating assets spread out across the land.

Some of these small power producers would arguably become an “in-between” market for photovoltaics and wind turbines. After all, following the distribution (with or

without deregulation), the total amount of electricity one of the smaller installations might produce is now small enough that adding a block of “green” power, even if that block would have been much too small for a large central station to bother with, would make a real difference in the generating capacity of the smaller installation. The starting costs would still be high at first, but even so, making 30% of a particular generating enterprise’s production capacity independent of fossil fuels would be a significantly different proposition than making independent .1% of a larger station’s capacity. Photovoltaics and wind farms can now be considered on their own merits, and upscaled to a significant fraction of an installation’s output if the economics warrant doing so – and many very clever people can now go to work figuring out ways to make economics warrant it, because having a significant generation asset which you never have to fuel is always attractive. Thus the number of photovoltaic and wind-powered installations which produce enough power to supply several households or businesses at once, or even a whole community, can be expected to increase under a distributed generation pattern of electric power production.

Once photovoltaics and wind power are no longer seen as being fit only to power individual buildings, this change would increase the amount of resources the society allocates to solving the scale problems that plague these methods. With better materials, the size of a single wind turbine would keep on increasing – it is no accident that wind farms of 5MW per windmill are now in development. Considering continued progress in materials, there is no reason to assume the upscaling of wind turbines will stop there. With the increased demand for photovoltaic panels, the costs of manufacturing a panel would continue to decrease, and the efficiency of a square meter of photovoltaic surface would keep on increasing.

To summarize, under the old paradigm, the central power stations would have provided enough power in such immense chunks that large green installations weren’t seriously considered, but with distributed generation, the chunks are broken up, and as a result some of them are now small enough that scaled-up installations of wind and solar power can actually compete. This may seem a paradoxical conclusion at first, since obviously the larger power plants would have much larger budgets available to install green power facilities should their boards choose to do so. But their fiscal obligations

would usually be correspondingly large, while the rewards of making a green installation work would be much larger for the smaller electricity producer. Other potential “green” methods which could benefit from this redistribution in the size of an average generation block include small hydro projects, and developing technologies seeking to harness the power of tides and waves.

4.2.4 Potential Effects of Distributed Generation

Besides the benefits distributed generation provides in load management, improved market penetration for “green” generation technologies, and, in cases of deregulated distributed generation, an increased market for power storage devices, combined with more accurate price signaling, there are additional benefits to be derived from this new paradigm. These are the benefits that the engineers and business majors that make most of the policy decisions in the electric power sector have unfortunately ignored unless forced to consider them by an outside agency – until now. The business community is currently recognizing the importance of these issues to economic and efficiency considerations, and it appears that this wider context is here to stay.

4.2.5 Emissions

First of all, there are the environmental considerations. Aside from the fact that distributed generation would, as was mentioned above, help energy storage devices and “green” generating technology gain a wider hold on the economy, we must consider the ability of this new arrangement to comply with environmental regulations. Since the new co-generational microturbines and miniturbines (the biggest single component of distributed generation after wind and solar power) would mostly be located at various installations that can use the heat as well as the electricity, it would usually mean industrial plants, or perhaps very large residential buildings or office parks that would ordinarily spend a lot of money on central heating. Such factories and buildings are already subject to stringent emissions regulation, and because they order new equipment more often than power plants in any case, they have more experience in making sure that

any new technology new technology they install fits the relevant parts of the emissions code. It would be easier for them to order a little extra equipment to sequester the emissions from their microturbine – after all, they will know that they will still save money with all the tariff costs of electric energy that they will now avoid, in addition to the money they will gain from selling their excess back onto the grid for a tidy sum. Moreover, a large central plant, whose board is aware that it is the only source of electric power for millions of people, might choose to bargain the regulators down to reach a lower standard. Smaller producers, used to meeting requirements for low emissions, and aware that no single one of them is irreplaceable to the local economy, would choose instead to give regulators no reason to find fault with them. There are still significant knowledge and inertia barriers to co-generation however.

Besides that, there is the issue of the physical capacity of a generating entity to sequester its emissions. Under distributed generation, the microturbine's and miniturbine's spread across a region would all produce their emissions in smaller amounts at any one emission point, compared with a situation when all emissions are concentrated at a single point of generation represented by a mammoth central station with frequently obsolete machinery. This reduction in emissions at any given location of production can allow for easier and more successful sequestration of these emissions than the old central-station paradigm would allow. Given the easier time which the owners of each distributed asset would have in purchasing more efficient machinery, very likely the total sum of emissions their facilities produce all across the region would also be smaller than that produced by a single central station.

A central power plant may produce so much CO₂ at once, not to mention other gases and particulate matter, that even with the best of intentions and the best equipment it may be difficult to capture all of it before some of the waste escapes to wreak havoc on the air quality of anything downwind. Even if the technology to sequester all those emissions at once is available, it may be difficult for a large central plant, with its multitude of financial obligations, to afford the necessary equipment. But under distributed generation, both the emissions, and the economic responsibility for them are distributed more equally through the economy. The many smaller turbines, all of which together would produce the same amount of power as a larger central station, can each be

fitted with its own set of sequestering devices in its own time, as each turbine is added onto the grid. Though this piecemeal installation may or may not cost more in the aggregate than installing the corresponding sequestration equipment on a central station, the important thing is that it will also be financed turbine by turbine instead of all at once. The burden of each particular financing operation will also fall on a different economic entity rather than lying on the shoulders of the same power utility (and, indirectly, its ratepayers, but since the utility is regulated, historically it hasn't been able to raise its rates fast enough to compensate for the added burdens.) This will finally make it possible to finance an overhaul of the electric power sector to meet the standards of sustainability without imposing additional burdens on either the provision of necessary services or the rank-and-file ratepayers. The extra money will come from the increased efficiency of the renewable energy assets operating under the distributed generation paradigm.

4.2.6 Communities

Another important variable to consider is the set of social consequences stemming from the implementation of the new paradigm. Before, the regional monopoly paradigm meant that any community which found itself within that customer block had to buy from a particular utility. Any change in favor of distributed generation gives buying power back to the individual communities: a community that wishes to make a statement in favor of air quality or sustainability can now vote with its pocketbook by buying electric power from the most environmentally-friendly providers. If the extra costs still attached to green energy concern the local town meeting, they can still buy electric power from operators of gas turbines who meet more stringent emissions standards than the old central power plants manage to meet.

Moreover, since under the new paradigm, anyone can become an energy producer, local communities can get in on the action, generating electric power for their own municipal buildings, schools, the local Boys and Girls Club, or anything else that the city believes to need electricity. The generating plants can be run through a [program designed to maximize the participation of citizens: for example, a school could put up its own wind turbine and some solar panels and use these various aspects of these devices in

action to instruct students in physics, math, earth science, economics, social sciences, metal shop, accounting, and so forth. A children's club could put up a solar panel, sell the electricity and then have the students of the local after-school program vote what to spend the money on. This can be applicable on a larger scale: any excess power produced can be sold into the grid to raise money for some project the community votes to fund with the proceeds. Local businesses can subsidize the added costs on the bills of any citizens who choose to buy green power, or make the purchase of solar panels or wind turbines for private households easier. In exchange, the city can give businesses that choose to participate in this program free advertisement in public spaces and breaks on any municipal tax. This sort of civic involvement can be channeled into any number of useful fields, from the reclamation of urban blight to making the city more attractive to outside investors.

Any communities that adopt this sort of active participation in the new electricity market will likely undergo a marked change in their relationship with their citizens. The city will stop being just a general designation to write on a billing address, and will now become a work in progress by its every citizen. The inexorable process of human atomization, a process which virtually defined late 20th century in North American suburbia, can now be at least partially reversed, with individual citizens coming together to make their places of residence into real communities. In turn this rise in community spirit can reverberate in the state legislature and even on the federal level, as elected officials take note of their voters' new orientation. Of course it would be naïve to suppose that a mere change in the electricity-buying patterns of some few municipalities would precipitate any sort of social revolution. Social inertia is a more stubborn beast than that. But, even if more changes than that would be needed to transform society to any great degree, a more involved participation of small and large communities in the production of electric power can still be a major force for the good in a former fiefdom of the power utilities, both with regard to the environment and with regard to the individual citizens' environmental awareness and civic spirit. This sort of collective decision making is fundamental to the democratic pragmatist.

4.2.7 Individual Attitudes

In addition to the empowerment that a paradigm of distributed electric power generation will bring to the community, it can also serve as a way to empower the individual. As the pattern of producing electric power in a region becomes more and more distributed, the number of privately owned wind turbines and solar panels will continue to increase. There are locales that are ill-suited to the installation of solar panels or wind turbines due to prevailing weather conditions, but the increased adoption of the distributed generation paradigm has led to a surge in the development of microturbines, which can be installed anywhere, and micro hydro installations, which can be installed in most places where water comes down from a higher feature of the landscape. The increased penetration of technologies like these into millions of individual lives could have numerous effects. An example would be the fuel cell, once manufacturing becomes common, most people will rely on this energy.

In many cases people will find it profitable to buy and install various generation assets for their private use. Even in cases when they would not be producing enough of an excess to sell to an aggregator, they would still make back the initial costs of installation, accumulating the money they save every month on transmission tariff rates. As generators, they would now be subject to whatever regulations the society has in place to control emissions: the users of wind, micro hydro, and solar power would find their production of clean energy encouraged by tax breaks and, in some cases, a guaranteed market provided by the state and municipal governments for green energy, while the users of microturbines would come under pressure to use their new devices in the most efficient way -- one that maximizes the amount of energy usefully extracted from any given volume of fuel and minimizes the emissions.

Those microturbine owners that pay for the latest models,(whose emissions now meet California standards for motor vehicles, and install the latest sequestration technology to capture the emissions that are produced, would be rewarded in our system by the tax code in direct proportion to the money spent on preventing emissions and the effectiveness of the measures taken. Those that opt to install microturbines that are less emissions-efficient per kW-hour than a central station's generators could have been would instead suffer appropriate penalties on their taxes. If the state in question has a

certificate system in place, such microturbine owners would be able to get out of the tax penalties by purchasing green energy certificates on the open market, in effect instituting a carbon trading system for distributed producers – something that would run into all sorts of legislative, legal, and lobbying obstacles if attempted on the scale of large central power stations. Since it is very difficult for a small turbine to be as fuel-efficient as a large one, this would encourage the further adoption of wind, micro hydro, and photovoltaic power, as well as further refinements in turbine emissions sequestration.

In the aggregate, all these outcomes will lead to widespread literacy in green power issues, not merely among activists or educated specialists, but at the grassroots level, where the resource allocation – that is to say, the decision to buy a new home generator – will take place. Not only will the owners of distributed assets themselves become better informed, but simply by being present among their neighbors, discussing their solar panels at the water cooler in the office or talking to the neighbor about what they bought with their new source of income, the new owners will reinforce a positive image of green electric generation as practical and profitable. Combined with the new paradigm's effect on communities described above, the introduction of the distributed generation paradigm would create a public awareness (that is to say, millions of instances of personal awareness) at least equal to that enjoyed by populations of such Nordic nations as Denmark and Finland. The awareness those countries enjoy of issues related to their environment derives to a large extent from the strong sense of community, and active membership therein, enjoyed by resident of a Danish or Finnish population.

Neither of these two nations has been afflicted by the suburbia blight nearly to the extent to which it plagues the United States, and so their citizens still see the town they live in, whether large or small, as something more than a mailing address. When a Dane or a Finn takes part in community life it is for reasons ranging from a desire for personal expression to psychological conformism to perhaps a simple wish to enjoy a pleasant neighborhood together with good neighbors. But in any case, community plays a much greater role in his or her daily living – and because of this, the Finn or Dane is much more likely to care about issues that affect that community, a concern which then expands by a sort of psychological transference, spreading to include issues which do not affect the community yet but might affect it one day.

To put it simply, citizens see a reason to get informed today about something that may happen tomorrow, because they have built up the general habit of making themselves informed through community participation. If distributed generation takes hold here, the spreading out of participation in energy policy that will follow on the heels of a spreading out of generation assets is therefore likely to build that habit among United States citizens, eventually creating a culture of active participation in the modern “edge city.”

4.2.8 Argument for Distributed Generation

Given the description of all the potential benefits distributed generation can bring to the investor, the consumer, the environment, the community, and the individual resident of that community, it is only fair to ask: why, if this paradigm has been more or less around for 20 years now, did so many of these projected benefits simply fail to materialize? The answer, as with technology (which is not surprising, since the two subjects are so obviously related) lies in the reluctance of large segments of the population in general, and of policymakers in particular to commit fully to distributed generation. In the absence of action, the old regional monopoly paradigm continues to trudge along by inertia, even in regions where the large central stations no longer enjoy a regional monopoly. In such regions distributed generation has indeed enjoyed some success, since in the absence of a regional monopoly a certain degree of distribution among generation assets tends to emerge spontaneously, but such successes have largely been piecemeal: scattered and largely unnoticed by the general public.

Indeed the public’s attitude toward the whole affair is characterized by an odd duality. The various drawbacks of the old central-station paradigm are widely perceived as inconveniences, but tolerated for fear that either the effort of changing the system would lead to greater problems still, or that the new changes are in some way an effort by “special interests” to defraud the public. Often the people simply do not demand change because they do not see any of the alternatives as viable, and after all, the old system still works well enough to keep electric power affordable, reliable and plentiful – most of the time.

But how can we make the distributed generation future possible? What is needed to change the industry is pressure from any one of the discourses in the right direction. Below, we discuss, in greater detail what the best course of action is for each discourse. The best course of action offers the discourse a more environmentally sustainable future in the electric power industry without having it compromise the ideals it stands for.

4.2.9 Administrative Rationalist

An Administrative Rationalist sees the world in terms of rewards and punishments that a central planning agency must distribute in order to get the situation into a state that the agency's experts pronounce optimal for the agency's goals. From this point of view, distributed generation is the natural outcome of the new knowledge, particularly technological knowledge, which allows producers to generate electricity at high efficiency without the need for a centralized regional monopoly. Clearly, if a technology is more efficient, all alternatives to it are wasteful, and so the pattern of spreading generation assets across the region must be favored by the controlling agency. This distribution in turn leads to deregulation and the introduction of multiple competitors. The logic of deregulation is straightforward: as the economy of scale ceases to be as important as it once was, the special privilege granted to regional utilities becomes unfair and unearned; a clear case of preferential treatment and, now that it is no longer justified by economic expediency, also a case of political patronage of a business by the government. As such, it is subject to the anti-trust regulations that exist on both state and federal statute books. As someone to whom the rule of law is of paramount importance, the Administrative Rationalist feels an obligation to repeal the regional monopoly paradigm.

One of the most pestiferous annoyances in the life of an adherent to the Administrative Rationalist discourse lies in the constant interference of outside factors that make various subjects of the administrator's regulations unable to meet them. If the subject is important enough, like the electric power industry, that often forces the administrator to make the best of a bad bargain and allow the subject leeway – and if this situation lasts long enough, it becomes part of the new status quo, with a new generation of bureaucrats finding all sorts of irregularities and inconveniences in any attempt to

change it. Today, we have situations when coal-fired electric power plants, which supply millions of people with cheap electricity, are allowed to dump toxic substances and greenhouse gases into the atmosphere with near impunity, emitting them in amounts that would have led to an immediate cease-and-desist court order if a nonessential factory attempted to get away with causing such pollution.

Under distributed generation, there are many electric power producers supplying any given region, some inside that region and some outside it. None of them are indispensable, and so whatever regulations the bureaucracies decide to impose upon the electric power industry under the new paradigm, those regulations will finally have teeth. The new producers of electric power will no longer be able to swing a state legislature or a governor's office into granting an exemption. Instead of being the potential opponents of the local regulatory body in the struggle for influence, the new power generators will see their best interests as lying in peaceful cooperation with the authorities. Even if they come together and pool their influence, that alliance of competitors is likely to be a great deal weaker than the board of directors in an old regional-monopoly monolith.

As described above, a region deriving its electric power from distributed generation is likely to find it easier to carry the regulations out. The efficiency of the new micro- and miniturbines, combined with the lower cost of fitting them with sequestration technology, will make it easier for the producers of electric power to comply with regulation, and so the regulator's pronouncements and actual reality will now correspond much better. Finally, under a distributed generation paradigm it will be possible to pass emissions regulations likely to have a meaningful effect. Before, a regulatory agency had to be realistic: an immense power plant with rotating generators bigger than a house would need to burn coal if only to make its operating costs affordable. With mini- and microturbines, on the other hand, we have installations that are quite capable of running on natural gas, or even biomass. It is this quality combined with the efficiency of using the turbine as a double heat and electricity source that makes it economically practical to build turbines no more polluting than the average sedan under California's latest emissions law.

4.2.10 Democratic Pragmatist

To Democratic Pragmatists, the ability of people to govern themselves, as opposed to having their decisions forced on them by an impersonal outside agent, whether a corporation, a state legislature, or a federal law, is the paramount principle. This requires a community to make all major decisions on the local level, so that free individuals can participate in the democratic process in the most direct way possible. This focus on community is not a contradiction in a discourse that emphasizes the democratic empowerment of the individual. The community is seen as an empowering principle, an eternal work in progress where each participant can make his or her wishes known, and many individuals can each bring their vision of the future to fruition by working together for the benefit of all. Seen in that sense, it is the lack of a strong community to support and nurture that individuality that makes possible the atomization of modern Americans into the anonymous sterility of the suburb, or the merciless anonymity of the decaying inner city, subduing their individual personalities to the conformity imposed by outside forces, whether that force consists of the government, the Board of Directors, or the neighborhood gang. It is possible to argue for or against this assertion, but that is the primary focus of the Democratic Pragmatist's efforts. The will of the people is paramount.

With regards to distributed generation, the Democratic Pragmatist sees the old paradigm as a process of taking decision-making power away from either individuals or the communities they live in. Under the mercy of the utility which was granted a regional monopoly, with uniform rates, tariffs, and conditions of service imposed upon every resident of every local community from the outside, the place where any one of them lives become scarcely more important than a postage address, and the people lose yet another connection to a living community spirit.

Just because a community might have once chosen to do so, granting the utility a contract to serve it, does not make such a situation desirable today, when its ill effects can be seen more clearly. Though the will of the people is paramount, many people can err just easily as one person can, and true democracy requires the opportunity to rectify past mistakes. If the people of a community wish for an alternative to the utility with which this community signed a contract years ago, it is the people's right to have such an option

available. For advocates of the people's power of informed choice, it is always important to remember that whatever efforts the utility makes to turn the service it renders into a relationship with the local residents, does not change the fact that it is a relationship where some power is held by the utility, some by the state regulatory agencies that set the conditions under which the utility rules its domain, but no power is left to the residents themselves, nor to the communities they live in. The utility and its outside patron-regulators set the rules of the game. Once it becomes clear that the centralization of electric power production is not necessary for efficiency, and may even interfere with reliability of service, no excuse remains for communities to tolerate such a grievous limitation upon their buying power.'

The distributed generation paradigm allows communities and the individuals whose interests those communities represent through those individuals' direct participation in the democratic process, to gain greater bargaining power through negotiations with many competing providers. This bargaining power is known as public power. It allows the communities to express their approval or disapproval of a generating firm's environmental, social, or any other practice by threatening to take their business elsewhere. It allows them to free themselves of tariff costs altogether by generating their own electric power, and to gain additional sources of revenue by selling the excess onto the grid. And, what is even more important to a Democratic Pragmatist, distributed generation can serve as a tool that the modern community can use to revive the civic spirit of its residents, to make them full participants in the direct democratic process rather than just population statistics. A community can make residents aware of a common goal and a common promise by giving them a selection of green energy programs to participate in, everywhere from school to the local park to the office building.

Given all the possible advantages that the issues they advocate are likely to obtain from greater acceptance of the distributed generation paradigm, a conclusion becomes clear. It would be an unpardonable waste – in fact it would be a failure to recognize the rarest and most rewarding opportunity in a century -- for adherents of the Democratic Pragmatist discourse in the United States to falter in their support for distributed generation.

4.2.11 Economic Rationalist

To an Economic Rationalist, the question might seem to be straightforward enough. Can investors gain a real profit – a profit based on the presence of customers willing to pay for the product, and not on any support from the government -- from the generation of electric power in many small plants rather than in just a few central installations? Can projects seeking to build such smaller power plants attract venture capital? Do they manage to recoup the initial investment – and if so, how quickly and by what margin? If the margin of profit is large enough to satisfy investors, and the time it takes to recoup the investment is short enough that they don't find it more profitable to channel their capital into other venues, more investors will support the next distributed generation project that comes along -- and the government should certainly not be permitted to stand in their way.

If, on the other hand, investors are reluctant to commit money to startups that propose to generate, sell, or distribute electric power on the open market, and if, provided they do commit that money, the public does not wish to pay enough for the service to allow the startups to recoup, in such a case the natural operation of the marketplace would spontaneously lead to regional utilities, complete with a monopoly on the region they service. In either case, there is no need for the government to do anything; in particular, says the Economic Rationalist, there seems little point in granting regional monopolies to utilities if these monopolies are allegedly so natural. Draw back, says the Economic Rationalist. Let the market sort it out.

In one sense, this point of view makes adherents of the Economic Rationalist discourse the natural allies of anyone who wishes to end the old system of state patronage and supervision of utility companies, which granted a utility regional monopoly in exchange for having all changes in rates, tariffs, or generation capacity subject to a board review from a regulatory commission. Such a system obviously violates the operation of the free markets: down with it! In that sense, Economic Rationalists are big fans of distributed generation.

On the other hand, any attempt by the government to impose another paradigm on the industry, as opposed to having this paradigm evolve spontaneously through market forces, will meet with stern and determined criticism from people claiming this to be

nothing more than new government patronage of new special interests, such as the renewable power lobby. If adherents of the Economic Rationalist discourse see that the startups attempting to gain market share in the newly de-monopolized region have trouble attracting venture capital on their own, they will assert, with good reason, that forcing capital into such undertakings amounts to involuntary expropriation of that capital from banks and venture firms, which would otherwise have chosen what they would judge to be better projects which to entrust with their funds.

Of course this portrayal of this discourse is a simplification, and any Economic Rationalists that seek to draw a strict line between profitable and unprofitable proposals are guilty of a serious oversimplification themselves. Very often investors approach some phenomenon that appears inherently unprofitable and create a market for it where none existed once. Some good examples would be railroads, aviation, cable TV, or cellular phones. Modern venture capitalists have gotten very good at pinpointing avenues of investment that are unprofitable as they now are but that can become goldmines with some judicious development. No real student of the market can fail to recognize these facts.

But this does not change the gist of the Economic Rationalist worldview: if it is profitable, well and good. If it isn't, it either can or cannot be made profitable. In either case, the question of developing it is between the venture capitalist, the people with the original proposal for a startup, and the customers, with no need for the government to do more than enforce contracts and safeguard private rights to property.

On the other hand, most Economic Rationalists would not be averse to the introduction of a healthier climate of competition in a sector that is currently constrained by a legacy of old externalities. This creates a paradox: the Economic Rationalist sees all government intervention as a distortion of market principles, but if these principles have already been distorted by decades of previous intervention, preventing the government from interfering will result in the old distortions persisting longer, while market forces struggle to build up the momentum to overcome the old system's inertia!

In a situation like that which has developed in the United States under the regional monopoly paradigm, energy prices are much higher than they would otherwise be, for reasons stated above. Mostly these reasons sum up to the inability of the generation and

transmission infrastructure to keep up with growing demand, plus the absence of competition, which means the absence of the impetus behind the lowering of prices in other economic sectors. For fifty to sixty years, the technology and the infrastructure have developed with the regional monopoly system in the implicit assumption of all designers, which means that very often newcomers have to solve numerous engineering challenges before they can generate their own electricity profitably or sell it over the regional grid. Because the transmission and distribution system was optimized for current flow from a few central nodes, even if the exclusive right of the utilities to service a region is removed, newcomers would still have a difficult time so much as getting the electricity they produce flowing to potential buyers, much less competing against a utility which owns the transmission grid and decides who gets on and who doesn't! Even under open access there will be distribution problems that would have to be dealt with, due to this initial, centralized generation system.

It is also important to remember that the same utility, besides owning the grid, also possesses massive generational assets in areas where deregulation has not occurred, which sometimes produce thousands of megawatts each. Most of these generating installations have long ago repaid their capital costs, while the newcomer must first order and install bulky and expensive equipment, and then set rates that would at least pay for these initial expenses. Under such circumstances, the only way the newcomer company can undercut the utility's rates is if it has some advantage that the utility cannot have by its nature as a utility: for example if it uses cogeneration to save on fuel costs, or if it only services the building to which it is connected directly and so does not have to pay to use the utility's transmission grid. These would indeed help a startup out in some small individual cases, but such solutions also inherently limit such companies' size and the size of the area they can service, which means the bulk of the market is still left to the giants.

In general, the deck is stacked against any attempt by the newcomer to win a large share of the electric power market, which, of course, prevents competition from bidding down the prices nearly as much as it could have. There is no doubt, from the point of view of the Economic Rationalist, that the effects of competition would be salutary for the industry and the consumer, but how can the benefits of a competing market be

brought to a system that is dominated by giants who refuse to allow a newcomer to gain hold?

According to theorists like Hayek, Rothbard, and Milton Friedman, such circumstances would lead to a re-adjustment as consumers find a way to get around the giants and obtain the product without the costs of dealing with them. Co-generation companies might get together and sell their excess to a middleman company that pools it and distributes it, which means that any given co-generation plant might now reach a wider market giving it more incentive to expand. Utility companies from outside the region serviced by one of the giants might seek to invade by extending their own transmission wires into the former monopoly's territory. The existence of multiple companies seeking to supply the same region might very well make the distribution business so chaotic that the utilities involved might choose to spin their transmission (or generation) assets off to form an independent power pool – an outcome which would in turn give aggregator companies more incentive to buy up the output of small co-generators. Fuel cells and other energy storage devices would expand, and the price of wind turbines and the efficiency of photovoltaics would continue to approach a point when they can compete with gas, and eventually with coal nuclear and large hydro installations.

All of that would be well and good, but given the technological, engineering and financial obstacles to these changes, not even the most optimistic of the libertarian theorists can claim that the process would not be a gradual one. The fact that electric power prices are usually perceived only as an inconvenience and not as an acute crisis means that whatever resources, financial, professional, or organizational, the market allocates to solving the problem, these resources will be far from a large percentage of the total resources the economy has available. They may be enough for a gradual reform, but not for a radical restructuring. Whatever benefits such changes may bring still lie far off in the future, and the flaws inherent in the regional monopoly paradigm would still take their toll on the quality of life in the nation for a long time, even with the regional monopolies themselves no longer being granted.

Under such circumstances an Economic Rationalist might see the value of government intervention – not in any directly coercive directive, but rather through a

policy of rewards and deterrents. The goal would be to break existing barriers to competition and the beneficial effects of the market by encouraging market forces to take effect and creating a market structure where the trend towards greater competition predicted by the great libertarian theorists are magnified, accelerated, and made more important in the priority structure by which the market allocates resources to various undertakings.

For example, even the most ideological of Economic Rationalists won't see the harm of a government introducing a massive tax reward for utilities that spilt their generative assets apart from their transmission and distribution assets, with a corresponding punishment of higher taxes for those utilities that fail to unbundle by a certain date. A tax moratorium on those commercial producers of electric power that own less than 20% of the generating assets in a region, with those producers who own over 20% of these assets assigned to bear the tax burden the beneficiaries of the moratorium would otherwise have paid, could also be a temporary measure to encourage divestiture. Provided such a measure is indeed temporary the Economic Rationalist would have no objection to a change in the tax structure intended to bring about greater economic freedom and competition.

Neither would adherents of economic liberty be averse to a repeal of taxes on the sale of any microturbine, fuel cell, wind turbine, or photovoltaic panel equipment, nor would they be likely to oppose tax favors granted to banks that loan money to startups in the electric power sector, nor yet another moratorium on taxes from income that is derived from any such loans. The government cannot, according to the Economic Rationalist, force a utility to divest, but it can create structure of rewards for those that do divest, and force those that do not to bear the burden of the taxes of which the divesters have been relieved.

The end results of the process: increased competition, more reliable access to electric power, lower prices, and a new class of electric power entrepreneurs constantly on the lookout for improvement in generation, storage, and transmission and distribution technology – would certainly delight any libertarian's heart. Many Economic Rationalists today remain critical of modern corporations for seeking exemptions and favors from Washington, and relying on various forms of "corporate welfare" to make

their bottom line. The replacement of an entire subclass of half-businesspeople-half-bureaucrats, whose first solution to any crisis would be a meeting with a regulator board, with a sector full of aggressive, inventive, innovative go-getters would certainly be good for business, and it is just about the only way proponents of Economic Rationalism would argue that changes in the electric power sector can be good for the environment.

After all, pollution is fundamentally inefficiency, and just because it so often imposed on the consumers as a market externality, does not mean that the consumers of electricity (who are also consumers of the air being polluted) would not be paying for it. Success at keeping emissions levels low and yet not raising the price of electric power serves a signal to the market that the company is well-run and so worth buying from (and investing in.) Thus, any entrepreneur who can generate electric power without relying on polluting technology, and without raising the price, can count on winning a larger share of the market from all competitors, since many consumers would be all too aware of the damage polluting emissions do to human health and to the world's climate. In a competitive marketplace, reputation is more important than money in the bank – it represents money you can raise in the future.

Because, in an unregulated electricity market, producing companies will wish to keep their reputation up, they are likely to pay a great deal more attention to environmental concerns than the utilities ever did during their undisputed reign. No coal-guzzlers like those currently plaguing the Rust Belt will be permitted in competitive conditions that would prevail after reform.

Because of this, an Economic Rationalist could argue that not only would it be to the advantage of Economic Rationalism's goals for the adherents of this philosophy to support distributed generation and the deregulation of the electric power sector that distributed generation implies, but it is to the advantage of the state governments and the federal government to carry the transition reforms out in a manner that accords best with the Economic Rationalist ideal – in other words, in a manner that does not actively seek to control the allocation of resources or the mode of production by direct decree, nor seek to determine the future developments of the industry through a master plan, but a manner that simply applies incentives and penalties to channel the natural fluctuations of supply and demand into the desired final state.

Such an approach to reform would result in many companies producing and selling electric power, none of them large enough to have an unchallenged monopoly, striving for ever-greater improvement of service and capacity in a competitive modern marketplace. A more controlling approach would, on the other hand, run the danger of creating a system where generation is more distributed, but neither more efficient nor successful at providing a real measure of choice to the consumer. The green generation technology for which distributed generation opens such an opportune window would languish under such a system, unable to sustain itself without subsidies drawn at the expense of the taxpayer and an artificial market for its output imposed by degree and so made unattractive to doubting investors. The window of opportunity provided by the change in operating paradigms would be gone before green generating technology can become a significant part of the region's portfolio of generating assets.

In conclusion, Economic Rationalists would support distributed generation because it enables the transition to the Economic Rationalist utopia of a bustling marketplace in place of a regulated bureaucracy. On the other hand, if this discourse is to commit fully to the reforms, its adherents must be assured that the path deregulation is to take would indeed result in greater economic freedom, and in a competition where none of the incumbents have the power to strangle newcomers in the cradle on the one hand, and yet aren't being forcibly expropriated of their assets and market share on the other. Unlike the Administrative Rationalist and the Democratic Pragmatist, the Economic Rationalist must come to see that a specific kind of distributed generation is being introduced, and that a further set of conditions is being met than simply the distribution of generating assets across the geography.

4.2.12 Ecological Modernizer

To an Ecological Modernizer, flexibility is the key. In order to make plans for an efficient, systematic arrangement, which maximizes consumer choice and green generation, and minimizes emission, waste, and price spikes, the range of options open to the would-be planner must be great enough to allow for an arrangement very different from that which exists at the moment. Several other different arrangements are probably

necessary; each of them planned out to meet various contingencies that the others cannot. The contingencies can range from a rise – or maybe a sharp drop -- in the price of fossil fuels, to new obligations imposed by the higher tiers of government or by an international treaty, to a new technological discovery, to an unusually quick change in demand for electric power in regions A and B, or conversely, a drop in demand in region A, but a spike in the demand of industrial sector X. The number of potential variations is myriad.

But the entire premise of the regional monopoly paradigm is that no swift changes are to take place, ever, nor are they ever desirable. All alterations in the normal operations of a utility, from the construction of additional capacity to the adjustment of rates to pay for installing new scrubbers on the plant smokestacks, have to be planned out in detail, cleared with the regulatory board, and then implemented according to schedule. The government can't slack off in their vigilance: absent regulatory oversight the utility would be able to play with its captive market as shamelessly as the energy wholesalers played with California during its power crisis, although some governments have made it apparent they won't let this happen again during deregulation by assuming very tight limitations. The ponderousness of oversight and review is the price the utility – or, rather, the utility's customer base – pays for the privilege of regional monopoly. This makes a regional monopoly system very good at one thing -- signaling to consumers and shareholders precisely what they can expect in the coming couple of years in enough detail to provide a fair forewarning. But it makes the same system unnecessarily ponderous and unwieldy when it comes time to re-organize in order to meet a suddenly necessary goal.

From an Ecological Modernizer point of view, it makes the most sense to go straight to the root of the problem and change the old paradigm for one that allows all technological, economic, and social policy that might touch on the electric power sector to have the capacity of swiftly adapting for any new set of circumstances, the policymakers secure in the knowledge that the firms involved won't get bogged down if their schedule is thrown out.

In that respect, distributed generation offers the Ecological Modernizer a great advantage compared to any practicable form of centralization. It can suit the changes in circumstances in the span of weeks or months, while a utility has to schedule its changes

in staggered succession that measures years.

The flexibility distributed generation model brings to electric power stems from the fact that a smaller generating plant, which at its peak load only makes about .5 of 1% of a sector's demand for power, is much easier to replace on the grid than a larger plant that makes 20% of it. Any changes that the Ecological Modernizer might introduce that make it impossible for the giant plant to continue profitable operations are obviously not an option; on the other hand, a change that makes even five smaller producers of electric power go out of business is still acceptable, because the same changes may very well make it possible for other producers to enter the sector, taking their place. At the same time, any one of these smaller enterprises might stop some, or even all, of its operations for a short time, in order to meet some technological requirement of the new plan, without leaving tens of thousands of people cold and in the dark. The smaller firm will lose less money when stopped, and will cost its owners less to get started again. In addition, whatever equipment the smaller firm will need for the change, it probably won't take months to make and install. The larger firm is likely to be better able to find the money for the new equipment, but with the greater losses it will take from any stoppage, the refurbishing might hurt its credit rating worse than the analogous process would hurt a smaller firm in such circumstances.

Another factor to consider are the very small generation projects, such as co-generational microturbines installed in private residences, single wind turbines or solar panels, or micro hydro projects using the local backyard creek falling off a great boulder. Although each micro generator is completely insignificant, they can prove extremely significant when added up together. These do-it-yourself projects are likely to become more popular as the electric power sector grows increasingly more distributed, with the same crowd of enthusiasts that makes the DIY cable channel a profitable enterprise today running the smaller setups as a hobby, and perhaps a small source of extra income. As the market for such micro projects expands, it will become increasingly cheaper and easier to acquire, install and service them, and so more people are likely to jump on the bandwagon – it is at least as much fun as other forms of home improvement, and can earn the hobbyist money into the bargain. Eventually, up to 5%-10% of all electricity consumed in the region might come from such micro installations. Incidentally, because

a great percentage of these households would use such weather-dependent means of generation as wind and solar energy, this would also mean a boom in energy storage devices, some of which would spill over even to people who do not, for one reason or another, own a home generator.

This means that under distributed generation, the Ecological Modernizers can take comfort from knowing that they have a significant fraction of the region's generation capacity serving as a useful amortizer, damping down any spike in prices that their reforms might cause. Moreover, at least some of these micro generation hobbyists – in particular the subset with business and/or engineering aptitude -- might be motivated by the price spike to expand their operations, getting financing from banks and wholesaler firms, rising from micro to mini level of generation, and so forming the nuclei of new startups, which might soak up more of the excess demand. These potential seeds of future firms would provide increased stability, their very presence serving to damp down such wild leaps in energy prices as those California had to endure in the winter of 2001. The development in energy storage that distributed generation would spur may very well translate into more responsible consumption of electricity on the demand side, which would also dampen the risk of runaway retail rates.

Another advantage that a geographic and proprietary distribution of generative assets holds for the Ecological Modernizer worldview lies in the comparatively small size of producer firms in the restructured sector. It is actually a very similar reason to that of the Administrative Rationalist, except that “vulnerability to regulation” must be substituted by “susceptibility to rewards and punishments”. Small companies are usually less insulated from punishment and more responsive to rewards, for the simple reason that their store of capital is small enough that a loss that a larger corporation can shrug off can often mean bankruptcy for a smaller enterprise – that is the reason so few startups decide to compete directly with General Motors. Conversely, for a small company facing cutthroat competition from larger ones, the rewards in loans, grants, or carbon credits that might accrue from meeting some reform measure's stated goal can mean the difference between shutting down or being bought out, and staying open for another year.

This means that not only will distributed generation make the electric power sector more flexible, and not only will it produce a subclass of small local producers to

amortize price shocks, but, whatever system of rewards and punishments the Ecological Modernizer will institute, the smaller producer companies will respond to them much faster than the onetime monopolies, so that the presence of such small companies will naturally accelerate the velocity at which the sector shifts its behavior in response to reform. Of course it is likely that small companies will soon merge into generating conglomerates, possibly spread across many states, to counteract the threat of inadequate capital. Nevertheless, with the market open, smaller startups will never be entirely absent from it, and a change in their behavior can serve as a catalyst that will turn around the rest of the market as it perceives the newcomers reaping the rewards proffered to them for their compliance. Whatever the case, with competition between different producers, even large ones, the market would be more responsive to a reward-and-punishment arrangement than a central monopoly with a guaranteed income.

To summarize, the Ecological Modernizer can have greater freedom of action under distributed generation, because, firstly, the greater ease of installing, maintaining, and bringing on-line a smaller generational facility will make for a greater range of options the Ecological Modernizers reforms can take, and secondly, the presence of the micro generator among the homeowners of the region on an income supplement/hobby level can, when taken in the aggregate, provide an amortizing effect on the swings in energy prices that the electric power sector might undergo during the transition period of whatever reform the Ecological Modernizer institutes. The comparative ease with which the smaller companies can install new equipment, combined with their greater vulnerability to fiscal punishment and greater appreciation of fiscal incentives makes them the ideal leaders in the Ecological Modernizers reforms, providing an example for the rest of the sector to follow. Simply put, given the basic paradigm of distributed generation, the Ecological Modernizer has more building parts to manipulate in the construction of whatever grand engine of future progress must be assembled in the name of the Earth, and some of these building parts, properly ignited, can put the engine into overdrive.

4.2.13 Green Romanticist

The appeal of distributed generation to the Green Romanticist focuses on access. By the nature of this discourse, its adherents have difficulty gaining access to the board meetings of utilities where policy is being worked out. People who work for a utility are naturally more concerned with meeting a complicated and vital operations schedule, and maintaining a sufficient level of output to supply increasing demand for energy over a grid struggling to process greater loads than it was built to handle. Environmental impact is a concern indeed, but it is more a concern with meeting environmental goals set by the regulation board than an active concern over the effect the utility's operations are having on the living Earth. The utility would often prefer to seek exemptions from the enforcement of a law, claiming it would be unable to operate otherwise, than to make a determined effort to find an alternate way to operate. The fact that when the utility claims that, very often it is telling the truth, is not a mitigating circumstance from the point of view of a Green Romanticist. Under such circumstances, a paradigm of energy generation that did not depend on coal and so did not have an excuse to avoid emissions laws would be a very welcome change in itself. In that respect, the Green Romanticist would be firmly allied to the Administrative Rationalist.

The communities and private citizens who decide to take advantage of distributed generation and generate their power locally are going to interact with pollution levels and emissions standards on a level far more personal than they did before. A homeowner who accepted carbon emissions from the central coal-fired behemoth as a necessary condition of having the lights on at night (and something out of his or her hands anyway) would have no excuses when he or she is the owner of the generator. A community that generates its own power also faces the same choice. If the citizens at the town meeting vote to install a coal-burner, not only will they know that the responsibility for the greenhouse gases and heavy metal isotopes it puts into the air is now resting directly on their shoulders, but they will soon realize that the task of justifying these emissions before the EPA will soon rest there as well.

Green Romanticist discourse speaks of the personal responsibility each individual bears for the impact of his or her actions upon the planet – but with the large central power plants, as well as other large corporations, to act as pollution intermediaries, it was

easy to fall into an attitude of “Well, such is life, if I boycotted electricity made from coal, others still would not.” Under distributed generation, and the deregulated market it implies, it is possible for customers to exercise their buying power guided by conscience, and those new producers, whether hobbyists looking to save on tariff rates or entrepreneurs looking to sell energy as at the helm of a startup firm, would have to face the facts that they are now contributing to the issue of climate change on Earth, one way or another, in the most direct way possible.

Even for those callous enough to remain uncaring under such conditions, the system of rewards for green producers and those consumers that buy electric power from them, which the government is likely to institute as part of its deregulation policy, would at least be a constant reminder of which actions, technologies, and power plant designs are and aren't polluting, and to what degree. Greater literacy in the issues involved is likely to breed greater concern: nobody likes the idea of an earth plagued by typhoons and droughts, with coastal cities battling to keep the rising sea levels at bay. Acid rain is no decent human being's idea of a picnic, either. As customers grow more informed, the reputation of a firm as less polluting grows more valuable, and as firms compete for the title of “least polluting” firms with the best reputation seek to make it more valuable still by educating their potential consumers, creating a sort of virtuous cycle.

Thus, for a Green Romanticist distributed generation is a godsend. First, it promotes responsibility, both among persons and within communities. Second, it creates a situation where both producers and buyers of electricity must educate themselves on the environmental consequences of any decision they make. And as a corollary to that, it increases the value of a company's good name among consumers, the way this value has increased in other competitive markets such as automobiles or fuels – and so promotes further education of both consumers and companies.

It is very likely that distributed generation will result in a better-informed and more responsible population. Thus it is in the best interest of the adherents of the Green Romanticist discourse to promote it.

4.2.14 Conclusive Argumentation

Distributed generation implies deregulation, since removing the economy of scale as a justification means that the chief obstacle to free customer choice between producers and suppliers of electric power falls away, and without it, none of the other obstacles are tenable. This is not, however, a change to fear. As long as transition between the two systems is implemented properly, the resulting system is more responsive to regulation, which should please the Administrative Rationalists, more empowering of communities and direct democracy, which should please the Democratic Pragmatists, producing cheaper, more reliable, and more efficient electric power, which should please Economic Rationalists. From the Economic Rationalist point of view, the transition to distributed generation is more important than the paradigm itself, because it is the transition that will determine whether or not the outcome will result in competition and entrepreneurial activity or oligopoly, consumer apathy, and government subsidies attempting to promote a paradigm the market refuses to support.

Any scheme intended to change the behavior of the producers through reward and punishment is likely to bear fruit faster and be amortized against price fluctuations that accompany the transition, which means an Ecological Modernizer should be pleased. Finally, a paradigm where generation is distributed among the population also distributes emissions literacy... and, at least sometimes, it also distributes an increased sense of personal responsibility among producers and consumers -- something Green Romanticists have been urging for decades! In short, the new paradigm offers great promise to every one of the major discourses.

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Appendix 1

California Energy Crisis

California was one of the most disappointing forms of deregulation. It caused a massive hurdle for advocates of deregulation in many other states. The reason we discuss it is because it is important to see what caused Massachusetts to deregulate the way it did. Also, comparing the policy in California and the policy in Massachusetts can give us an understanding of the discourses involved in California letting us make sure that those discourses do not appear as they did here.

The case of California, with its leaps of over 250% in wholesale costs and the sight of power distribution companies left drained of all purchasing power and unable to meet their obligations to deliver electricity to the consumer, is often cited by opponents of deregulation as proof of the dangers inherent in the market. Paradoxically, the case of California can be seen as the best example of the case against deregulation's opponents: the crisis was likely due to the vulnerability of the industry at the time. In short, it was an illustration of what happens when the government regulates deregulation too much. None of California's pricing problems can be traced back to the fact, in and of itself, that electricity was now being sold as a commodity on a fluctuating market, but all of them can easily be traced to one or another of the constrictive regulations with which the new electric power market was hobbled.

For example, we know that the wholesale prices for electricity exceeded retail prices, initiating a financial disaster for the distribution companies that used to be California's utilities. The distributors were paying more per kilowatt-hour to buy electricity than they were getting back from their customers, yet they were obligated to deliver the electricity to the end users. This made them a captive market for the generating companies.

Why, we may justly ask, would the producers of electric power not increase generation to take advantage of rising prices (and by so doing bring them lower again)? On examination, we find a number of reasons making such courses unlikely:

1. The electric power industry was deregulated, but the oil refineries were not. Limited number of oil refineries created a bottleneck for generators.

2. Drought – no availability of hydroelectric power from the North. What hydro-generated power was available was not sufficient to meet the unusually high demand of the year 2001.
3. Rising prices of natural gas.
4. Record heat in summer of 2000, record cold in winter of 2000/2001.

California gets 1% of its electricity from coal, 46% from natural gas, and 22% from hydroelectric dams. The balance is made of renewable fuel sources and oil. Since hydroelectric power supplies could not be increased, neither could gas supplies (the rise in prices was due to a decreased supply, and production could not expand enough in a time frame that could have prevented the crisis), oil could have made the difference, allowing producers to increase generation and bring prices down. Unfortunately, the limited number of oil refineries meant that it was useless to ship the oil in, since it could be made ready for use by the power plants only at a certain maximum rate, which had already been reached.

Market Signals Failed

As explained above in the description of California's deregulation model, generating firms had to sell their power through the PX (Power Exchange) electronic market. On the PX market, the highest-priced unit of energy determined the prices of all other units, therefore price signaling was distorted.

Another distortion came from the retailers (the IOUs) being unable to make bilateral "futures" contracts directly with the generators: the PX system only allowed purchase up to 24 hours in advance. The possibility of bilateral contracts would have allowed the IOUs to protect themselves from the risk of rising prices, while protecting the generating company from the risk of competition; by disallowing them, the state distorted the market once again.

Finally, the public never felt the incentive to conserve power. The rate freeze operating across most areas serviced by IOUs was intended to prevent the consumers from feeling the rate increase while the IOUs would have recovered the costs of constructing the power plants that they divested during deregulation. In reality, what happened was that most Californians never felt the incentive to conserve power that an unregulated retail rate would have provided. The IOUs did not have the option of

refusing service, nor of raising retail rates. They had to buy ever-increasing amounts of power from the generators, no matter the cost: demand became uncoupled from supply. Once again we have a catastrophic distortion of the market's price-signaling mechanism.

Finally, because the hardware of generating power was still oriented towards large producers, and the construction of new power plants, transmission lines, fuel infrastructure to service the larger generators, it was extremely capital-intensive and slowed down by the state regulation of all additions to that infrastructure, the signals that an overheating market normally sends out, attracting new producers and thus increasing supply and decreasing the price level, were too weak. This feature is of the industry is only normal to industries being deregulated. New investors did indeed enter the energy market, but their work was nowhere near fast enough to bring wholesale prices down in time to avoid the crisis, though by 2001, the state's generation and distribution infrastructure was indeed more efficient than that of 2000.

To summarize, the so-called "free" market of the deregulated California power sector was anything but free. Under its "deregulated" conditions, it consistently failed to send out:

1. Signals to match supply with demand with regard to prices of individual power units.
2. Signals to match a supply of risk amelioration (in the form of bilateral long-term contracts) with the demand for it on the part of the IOUs.
3. Signals to let the customers know that energy conservation measures would be desirable, and to let the producers know that excessive gouging would result in a decrease of their customer base.
4. Signals to attract new participants into the sectors are enough to prevent the spike in prices.

If this is California's idea of the free market, the state government is quite right in its complaints. Such a market is indeed doomed to failure. Its relation to the dictionary definition of the free market, however, lies purely in the no doubt accidental fact that the two concepts have identical-looking printed names. Free markets do not improve production and distribution through the magic power of names: they do so by price signals, which California's deregulated market utterly failed to send.

Price Gouging

Energy providers on the wholesale market were frequently accused of playing the market, buying cheap electric energy from the original generators, selling it (sometimes over ten times) to each other or their own subsidiaries at ever-inflating prices, finally selling it to the retailers at an arbitrage of several hundred times the original value per kilowatt-hour. This is price gouging – defined as selling at artificially inflated prices to someone who the seller knows has no option but to pay any price asked. Of course the fact that price gouging took place is not up for dispute: the investigators looking into the matter afterwards found recordings of Enron Board Members' voices discussing their plan to game the energy markets. The question becomes: why did Enron and other such companies come to believe that this sort of collusion was the optimal way to maximize their bottom line?

Under free market conditions, such collusions are undercut by the simple prisoner's dilemma. If any one of the firms involved lowers prices instead of raising them, that firm can capture the market share of all the others, making up in bulk payments what it gives up in rates. Fearing this maneuver on the part of their competitors, all firms seek an equilibrium point, where the attraction of the lucre gained from price gouging is balanced by the risk of competitive undercutting.

On the other hand, in California under the Gray Davis' idea of deregulation, the wholesalers had themselves a captive market: the IOUs were unable to refuse to buy from them and unable to pass their costs on to the consumer. This alone would decrease the probability that a wholesaler would see the option of lowering prices as a path to greater market share and presumably higher profits. Even with a smaller market share, these wholesalers could still make all the money they wanted, by milking their captive buyers. On the other hand, increasing production and lowering prices was costly, constrained by licensing bottlenecks, and since everybody was aware that the situation could not last indefinitely, no wholesaler could afford to wait for years until the new generating installations would be ready to provide the cheap power. The behavior of the wholesalers is predictable by simple economic principles: they chose the course most likely to boost their profit margin, and if they had not done so, other firms would have. But it was the state of California, and the shortsighted policies of its government, which "optimized" the

market so that price gouging lead to highest possible profits, which made this behavior rewarding to the miscreants.

Appendix 2

Subject 1 – Electricity Policy Employee

Administrative Rationalist

- Role of government in power generation: Better government action could be taken. Better leadership from the government in promoting more environmentally and economically sustainable energy and ensure that the policy that are already in place works.
- Getting someone in government to have a clear message and speak on the “Bully Pulpit” about the importance of renewable energy
- Systems Benefit Surcharge: He gets paid by it
- He managed the process to write the regulations for the Renewable Portfolio Standard
- What he would have done differently in Massachusetts: If you get the existing utilities to sign a long term contract to purchase a certain amount of renewable energy then people would be more willing to invest.
- He sights an example of a solar company that couldn't raise the funds on its own to make efficient low cost solar cells. They got a grant to supplement the cost from the federal government. He says that that is an important partnership.

Democratic Pragmatist

- Frustrated about public support: people should do more
- People need to make trade-offs to get renewable power generators in their back yard.
- Customer perception is one factor that drives companies to be more resourceful in achieving efficiency (The individual has an effect)

Economic Rationalist

- Some larger companies have found an interest in Wind generation because they appreciate that there aren't large price fluctuations, unlike fossil fuels
- Vertically integrated monopolies will do what they need to do in order to comply with regulations but they don't have much incentive to go beyond that for the greater good. But a company that is competing for retail customers might have an incentive to do better to get more of a market share
- The sighting process of developing new green power plants is getting dragged out a little too long.

Ecological Modernizer

- There needs to be a partnership between government and private sector when it comes to better energy sources
- It is a mix between education and companies/consumers buying patterns when there are supply problems

Green Romanticist

- His career

- Was excited about the opportunities of deregulation prior to restructuring: People could vote with their purchasing power, but it has been slower than hoped

Problems

- Surveys about people saying that they would be willing to pay more for renewable energy: easy to say it in a survey-harder actually getting them to sign up
- With renewable energy they have to sell two things: their power, and their energy certificates. There is a danger that the government will change their position and the market for renewable energy certificates will disappear.
- Frustrated about public support
- You have to work hard to find someone to sell renewable energy, it takes more work than most are willing to put into it
- The renewable portfolio standard is struggling a little right now. It is not working the way that it was envisioned. b/c we don't have government sighting policies to make it work. It is getting bogged down in permitting and approvals processes.

Subject 2 – College Professor

Economic Rationalist

- Part of the Libertarian Party: Which supports the privatization of government
- Electric power companies in this country haven't been very profitable
- In California the highest bidder instead of the lowest: This was a major problem.
- Saying that California deregulated is incorrect. It was a different setup of regulations that was created to make some people a lot of money

Subject 3 – Green Energy Project Coordinator

Administrative Rationalist

- She is funded through a grant through the Massachusetts Energy Collaborative which get their funding by Systems Benefit Surcharge.
- She said that the Federal government doesn't really have a stand and they should. They should support renewable energy through R&D and renewable energy generation.
- The city should be more serious about energy conservation and should purchase a portion of their energy from renewable.
- She thinks that the surcharge could be increased, not too much but it can be a little because at the moment it is very small.

Democratic Pragmatist

- She meets with majors, city council members, and people on the school committee.
- They are offering to them the ability to buy clean energy certificates and have the money that they pay to come back to them to be used for education and solar panels

Economic Rationalist

- She wants people to have choices on an electricity provider. She thinks that green energy has a better chance under deregulation.
- It is economically sound because renewable energy prices are stable.
- A mandate for public schools wouldn't be a good idea because it could stop a school from being built that really should be built. Not so strict.
- It is better to make clean energy marketable because the world runs on money.

Ecological Modernizer

- A partnership between government and the private sector

Green Romanticist

- Started working with green electricity at the end of 2004. She did her master thesis on the greenhouse gas emission in the city of Worcester: She thinks that the environment is important enough to do that much work
- Schools are being offered the ability to buy clean energy certificates and have the money that they pay to come back to them to be used for *education* and solar panels.

Problems

- Companies don't have an incentive to be one the least polluters. Example: if a company is number 1 then they go down to 3 or 4 people will think that they aren't doing as well. It is better to stay in the middle.
- Companies haven't been responsible with natural resources

Subject 4 – Electricity Policy Employee

Administrative Rationalist

- Has a management job in a state office dealing with environmental impact.
- Refers to international treaties, such as the Kyoto protocol
- Criticizes businesses as being susceptible to fuel prices, so that even great progress in green technology since R&D began in the 1970's was not enough to make green technology acceptable after the oil prices plummeted in the late 1980's.
- Expert of the sort Administrative Rationalism trusts with determining policy – degree in mechanical engineering, previous job as a college teacher. Area of expertise is non-profit organizations and government policy.
- Hesitant when asked for opinion on deregulation, as it is not his “area expertise”.
- Mentioned how hard it was for developers of green power project to find long-term contracts in a deregulated market. In the old, less volatile days, they could just sign a contract with the utilities to supply them green energy for years in advance.

Economic Rationalist

- Wants more competition in the energy market.
- Expresses disappointment at the dearth of competitive suppliers of electric power

- in general and green energy in particular.
- Stated his belief in inherent limitations of the government's efficacy at solving the problem of green energy.
 - Stated that the "deregulated market is working", although "newcomers are not coming in as aggressively as we'd like them to."
 - Talked about increasing importance of environmental PR in the calculations of businesses. Stated that PR was not as important as other considerations yet, but that it is becoming increasingly more important.

Ecological Modernizer

- Likes the idea of the requiring an investment of each energy provider in the Renewable Energy Portfolio, as it stimulates the market for green energy.
- Despite his expressed desire for more competition, believes competition needs "enforcement"
- Talked about the externality known as "tragedy of the commons". Stressed the need to educate the public.

Problems

- Companies fail to recognize green energy as something reliable and investment-worthy today. Still see all forms of green energy, even those as cost-effective as wind power, as expensive and experimental. Banks are conservative, refuse to take the chance on a green power boom. Expressed faith that this is turning around, as investors see oil prices rising and wind power.
- Complained about vocal resistance to wind farm developments. Residents of communities close to proposed sites complain about noise, death of birds, often exaggerate problems. The arduous process scares off investors, imposes new costs on developments that the project must recoup – makes banks even more hesitant.

Subject 5 – College Professor

Administrative Rationalist

- Not convinced that deregulation is the best idea in regard to electric power generation
- He feels that in some industries government regulated monopolies are in the public's best interest. (e.g. the Bell telephone monopoly served the greater good because of their massive effort in R&D through Bell Labs.) He also includes power generation and transmission in this category.
- A problem with deregulation: It is making a necessary service into a commodity.

Democratic Pragmatist

- Information that would support this discourse is not contained within this interview

Economic Rationalist

- He mentions that states have learned from California's mistakes, which suggests that he believes that deregulation can work

- Price drives companies to be more or less resourceful.

Ecological Modernizer

- He led a project which looked at the feasibility of electric powered vehicles which was partially funded by government grants to the educational community. He also has a Hybrid vehicle in his household. This suggests that he most likely believes in collaboration between industry and government when it comes to environmental R&D.

Green Romanticist

- He believes that educating the population is beneficial to society. He not only worked as a professor in a college, but he also was involved in alternative fuel system transportation.

Problems

- The current system is too complicated for the common person to decode
- He thinks that in some cases the breakup of monopolies isn't the best course of action.

Subject 6 – Transmission Engineer

Administrative Rationalist

- After deregulation the costs remained high
- The only reason why National Grid went along with deregulation was because Massachusetts. Government mandated it. Before, they could effectively compensate for distributed energy need by turning on/off power plants, now they don't have as much control.

Economic Rationalist

- He argued that the British deregulation model was superior to that of the various US states (in particular Massachusetts) because the Brits did not try to prevent prices from spiking after deregulation. In the end, argues Moser, the act of spiking brought in suppliers wishing to cash in on the high prices, and thus caused prices to stabilize at a lower level than prior to deregulation.
- He also discussed the failure of the modern electric power market to signal the difference in prices between the peak and off-peak hours. This creates patterns of use that reinforce the problem. If peak hours were more expensive (i.e. as expensive as they really are), the customers would be more willing to peak alternative providers, or to invest in energy storage devices.
- Discussed the two models of adding a new provider to the grid “common carrier” where anyone pays a simple fee and uses grid to transmit electricity, or the “costs of optimization model” where each new carrier has to pay the cost of re-optimizing grid. The first favors new providers, including green energy suppliers. The second favors companies already existing on grid. Which is fair? Suggested that a loan system to pay for grid re-optimization is possible, but bankers must be interested first.

Problems

- As stated above, they had more control in preventing brown/black outs before deregulation.

Subject 7 – Demand Side Management

Administrative Rationalist

- Made a statement the Pres. Bush got rid of all the incentive based energy programs
- The government should invest in tech that is almost ready for prime time
- The Systems Benefit surcharge is doing its job and it is working well.
- Regulation has an effect on companies' resourcefulness

Democratic Pragmatist

- In California demand was cut by individuals taking action. Electric consumers are smart, if they are informed that there is a really serious situation they are able to make good decisions that make a big impact.

Economic Rationalist

- Consumer demand needs to be created to solve environmental problems.
- Generation of electricity is much more subject to market forces now and that is probably a good thing
- Large companies have benefited from restructuring
- Has the opinion that restructuring in Massachusetts was done well.

Ecological Modernizer

- Collaborates with the MTC to get schools to invest in green alternatives

Green Romanticist

- Problems have already arisen and companies haven't done anything.
- Concentrates on overall conservation of electricity: demand side management

Problems

- Problems have already arisen and companies haven't done anything
- The payback for personal green generation takes a very long time.