The Current

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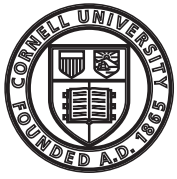

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Mission Statement

As the academic journal of the Cornell Institute for Public Affairs (CIPA), *The Current* provides a platform for public policy discourse through the work of CIPA fellows and their mentors, with contributions from the public affairs community.

Editor's Note

The notion of balance is fundamental to the concept of sustainability. Balance must be upheld or restored to maintain persistent states, systems, or processes. In this world of interconnection, the achievement of balance involves multiple interventions into the varied systems in which we operate. The spring 2009 edition of *The Current* was assembled in acknowledgement of this broad definition of sustainability and how sustainability can be put into process in the context of public policy.

True to this theme, the spring 2009 edition draws on development, environmental, agricultural, social, and economic policy to offer a cross-disciplinary view of sustainability. *The Current* is also pleased to present interviews with David Harris, Tina Nilsen-Hodges, and Ignacio Armillas, three prominent figures involved in sustainability work within their fields of focus.

The Current owes the utmost gratitude to its dedicated staff, both in-print and online, who spent many hours (wholly unsustained) reading, editing, and critiquing for this issue. Additionally, *The Current* would like to thank its contributors, the CIPA faculty and administrative staff, and the students of the Cornell Institute for Public Affairs whose passion provided the inspiration for this edition.

In keeping with the spirit of sustainability, *The Current* had to reexamine its own ecological impact, while maintaining a financial balance. To paraphrase Neil Armstrong, our contribution of printing this edition on recycled paper is one miniscule step in the grand scheme of things, one great leap forward in the world of *The Current*. It is my hope that this practice be continued as we continue to reimagine our world as editors, as students, and as human beings.

Finally, in giving my sign off as Editor-in-Chief, I would like to thank, in particular, Senior Managing Editor Megan Hatch and Managing Editors

Nancy Sun and Michaela Stewart for all of their time and effort. At the end of my tenure, I can say that I am truly proud of this publication and am honored to have been given the opportunity to play a part in its history.

Sincerely,

Paula E. Reichel
Editor-in-Chief

Contents

[Articles]

[Views & Reviews]

Stable and Satisfying Water Concessions for Developing Countries

Lessons Learned from the Cochabamba Water Concession

Jordan Eizenga

ABSTRACT

Water privatization is capable of generating substantial long-term benefits. However, short-term costs in the form of increased water prices are often sufficient to generate opposition that brings about the cancellation of a private water concession. This paper examines tools that complement a privatization concession and allow for both productive and allocative efficiencies. The paper refers to the water privatization concession in Cochabamba, Bolivia as a case in point. In particular, this paper will show that a compensation mechanism coupled with a simple privatization model can allow for a stable concession by satisfying all parties involved.

The issue of water privatization continues to generate polarizing perspectives. The standard argument against water privatization is that it conveys control of water services to private investors who, in turn, place low income households' access to clean water at the whim of market pricing and profit motive. Proponents, by contrast, claim that water privatization is a viable option for indebted governments with little financial resources, poor credit ratings, and deteriorating water infrastructure. From this view, profit incentives "[enhance] the quality of the water and scope of its distribution." What remains clear is that fundamental and polemical disagreements over the very nature of how the resource should be managed make it increasingly difficult to implement stable and durable water provision schemes.[1]

This paper is an attempt to transcend the divide between proponents and opponents of privatization. The paper performs three tasks: first, it seeks an understanding of the nature of the disagreements between proponents and opponents of water privatization; second, it provides an economic analysis for the disagreements that led to the cancellation of the concession in Cochabamba; and, third, it provides an empirical and theoretical examination of relevant water provision approaches and evaluates their ability to satisfy the relevant parties involved in a

water privatization scheme.

The Nature of the Disagreements

In order to construct a stable water provision model that reconciles the divisions between proponents and opponents of water privatization, the nature of this division needs to be fully understood. Disagreements between the two camps cannot simply be attributed to differences in policy goals. The reason for this is that proponents and opponents not only share similar policy objectives (i.e., to increase accessibility to clean water), they also have similar, if not the same data from which to base their evaluations. Kanbur cites two separate examinations of the same water privatization scheme in Argentina. The first study by Galiani, Gertler and Schargrodsky identifies an eight percent reduction in child mortality in neighborhoods that privatized their water services and a twenty-six percent reduction in the poorest regions.[2] The second is an article appears in the online magazine, *The Public Citizen*[3] entitled "Water Privatization Fiascos: Broken Promises and Social Turmoil," which highlights the fact that post-privatization water rates increased twenty percent, costs that the article maintains is being borne by the poorest individuals.[4] The relevance of these two articles is that both appear to make valid claims with substantial statistical evidence in support of their respective positions. This demonstrates that the nature of the disagreement cannot be attributed to policy goal differences, but rather to some difference in the ethical and analytical frameworks from which evaluations of water privatization are made.

One explanation for the disagreement is that proponents and opponents are divided between those who formulate their arguments on the basis of empirical outcomes and those whose arguments are theoretically rooted in principles. According to this account, the two groups fall into one of two categories: those adhering to a utilitarian analysis and those who utilize a deontological approach. Those who favor the latter tend to criticize the former on the grounds that it reduces ethical analysis to mere calculations of value. From the deontologist's view, a utilitarian evaluation conflicts with basic intuitions about justice and the dignity of individuals.[5] In short, the utilitarian approach of "the greatest good for the greatest number" conflicts with fundamental notions of a right.[6] Proponents of the deontological view maintain that purposeful water management policy, therefore, ought to be given direction first by principles that are derived from the just entitlements of citizens.

The fundamental problem with the deontological approach is that while it may be a useful framework to isolate and affirm particular rights, it does not address how those very rights can be sustained in

practice. Consider the following statement made:

> Water is a fundamental and inalienable human right and a common good that every person and institution should protect. This resource is, like air, a heritage of humanity and must be declared that way. Water is not a merchandize and no person or institution should be allowed to get rich from the sale of it. It should not be privatized, marketed, exported or transferred to a few multinational companies. [7]

Obando transitions from a principled, rights-based discourse concerning access to water to an equally principled discourse on how that resource should be managed. No mention is made of actual empirical outcomes and the determinants of those outcomes. Rather, Obando treats the problems with privatization as self-evident and self-justifying. This is not to suggest that access to clean water is not a human right. There ought to be separate decision making processes that go into the evaluation of a right and the evaluation of how best to uphold that right. The problem with arguments such as Obando's is that they are rooted in an appeal to a theoretical principle in which the evaluation of actual consequences is entirely irrelevant to the propriety of a particular course of action. This demonstrates the practical difficulties of centering policy decisions in strictly principled terms. As disagreement becomes rooted in theoretical discourse, "disputes move from bargaining points to moral principles [and] morality radicalizes."[8] Simply stated, from a practical standpoint, theoretical disputes are hard to reconcile. If proponents and opponents of privatization are going to come together to achieve common goals, it will not be the result of a reconciliation of ideological or deontological differences.

There is also a significant problem with the utilitarian-deontological dichotomy itself. It must be possible that a proponent of privatization can maintain a principled defense of privatization while, at the same time, supporting that defense with outcome specific information. Similarly, a utilitarian must also be able to support an empirically driven position with theoretical principles. The utilitarian and deontological approaches can be combined and thus the dichotomy does not provide a theoretical explanation for the differences in the views of proponents and opponents of privatization.

Divisions, therefore, will need to be healed within the utilitarian camp, in which disagreements arise with respect to the evaluation of outcomes.[9] This paper adopts the utilitarian categorization of the disagreements laid out by Ravi Kanbur, Economics Professor at Cornell University. Kanbur maintains that the nature of the

disagreement between proponents and opponents of privatization can be found in the scope of the evaluation and the priority each gives to various factors involved in the examination. He maintains that the respective perspectives of proponents and opponents differ along three dimensions: aggregation, time horizon, and market power. For the purposes of simplicity, the parties involved in the privatization debate adhere to one of two worldviews: the "Civil Society" (CS) worldview or the "Finance Ministry" (FM) worldview.[10]

The CS worldview tends to be less aggregated, focusing on the impact of a policy to individuals, particularly the poorest individuals. With respect to time horizon, the CS view evaluates the efficacy of a particular policy from a short-term perspective. Accordingly, immediate costs and benefits are of a greater concern to the CS view. Lastly, the CS view tends to attribute a noncompetitive structure to markets, emphasizing disproportionate allocations of market power.

The FM view, by contrast, emphasizes aggregated data such as nationwide statistics in which winners and losers of a particular policy are aggregated. In addition, policies are typically evaluated by the FM view with an examination of the long term gains and losses. Finally, the FM view tends to perceive market structures as competitive.[11]

When examined from this perspective, policy differences between proponents and opponents of privatization become more understandable. Proponents of private control of water resources tend to an FM view in which outcomes of privatization are evaluated by an examination of aggregate data collected over a longer period of time. Long-term benefits in increased water and sewerage connections are emphasized and less mention is made of short-term costs, such as increased service charges. The anti-privatization camp, by contrast, tends toward the CS view. They focus on immediate rate increases born by the poorest individuals and the monopolistic power of private water companies.

Consider the two assessments of the Argentinean water concession evaluated by the article by Galiani, Gertler, and Schargrodsky and *The Public Citizen*. The Galiani, Gertler, and Schargrodsky study aggregates data concerning long-term health outcomes of increased access to clean water. Galiani, Gertler, and Schargrodsky maintain that the long term benefits of the privatization scheme (decreased rates in child mortality) justify the implementation of a private water concession. *The Public Citizen*, on the other hand, focuses on the short-term costs borne at the individual level. It emphasizes immediate social dislocations and the costs of the Argentinean water privatization scheme and sees this as an argument against the privatization of water provision. The evaluation by Galiani is indicative of the FM worldview, while *The Public Citizen* article reflects the CS worldview. Each way of thinking focuses on a different aspect of a typical water privatization scheme.

An effective water provision scheme that is acceptable to adherents of both the CS and FM worldviews will need to satisfy three basic conditions: first, it must minimize short-term costs borne on the individual level; second, and following from the first condition, it should mitigate negative externalities associated with the noncompetitive market structure that result from private water provision; and, third, it needs to generate real long term benefits at the aggregative level in the form of increased accessibility to clean water.[12]

An Example of the Two Tendencies: The Cochabamba, Bolivia Water Concession

This paper now turns to an examination of the two tendencies and their impact on the Cochabamba[13] water concession. The Cochabamba concession is a case in which irreconcilable differences between proponents and opponents of the concession ultimately resulted in its cancellation. An examination of the Cochabamba concession and the reasons for its failure serve two purposes: first, it will demonstrate how tension between the tendencies can impede on the long term goals of a project; and, second, it will prove informative when evaluating relevant water provision approaches for future water concessions.

Since 1967, water provision in Cochabamba had been managed by SEMAPA (Servicio Municipal de Agua Portable de Cochabamba), the municipal water company. Over the course of thirty years, SEMAPA became known for its poor performance. Water coverage reached only fifty-seven percent of the population. Losses from illegal connections and leakage reached levels of fifty percent. The high number of non-paying users helped contribute to SEMAPA's pre-existing financing problems, as estimates indicate that five to ten percent of all connections were illegal.[14] SEMAPA also had serious difficulty with water availability. Levels of unsatisfied demand were high at thirty-nine percent, resulting in a permanent state of water rationing. In response, many consumers constructed their own water tanks and water wells, which led to serious environmental and health problems from groundwater contamination. Thus in 1999, in the context of SEMAPA's financial crisis and its productive and allocative inefficiencies, the Bolivian government responded to World Bank structural adjustment policies by implementing a water privatization scheme for Cochabamba.[15] Bolivia was practically insolvent and, for this reason, it had little choice but to accept the World Bank's recommendations.

The forty year water concession granted exclusive access to the municipality's water resources to the Aguas del Tunari consortium led by International Water Limited and U.S. based Bechtel Enterprise Holdings. The agreed upon contract stipulated an initial average tariff

increase in water service rates of thirty-five percent, in addition to a further rate increase of twenty percent. This increase brought Cochabamba's water rates up to the pre-existing levels in other major Bolivian cities such as Sucre, La Paz, and Santa Cruz. However, the tariff structure was intended to be socially progressive, as large consumers were to pay nearly three times that of low consumers of water.[16] The assumption behind this tariff structure was that low income households consume less than higher income households. Accordingly, when the concession was implemented, small consumers saw ten percent increases, while large consumers saw increases by upwards of 106 percent. The rate hike was a reflection of both the consortium's large investment to finance the project and the additional expense of paying off SEMAPA's $30 million (U.S.) debt, a stipulation of the new concession.[17] In addition, mandatory expansion targets were written into the contract and subject to a revision procedure every five years:

Table 1: Aguas del Tunari Network Expansion Targets, 2000-2004

Year End	2000	2001	2002	2004
New water connections	3,850	11,800	33,600*	57,600*
New sewerage connections	4,150	12,150	34,150	58,200
* Subject to water availability from Misicuni				

Source: Concession Contract with AdT, Annex 6

Table 2: Aguas del Tunari Network Coverage Targets, 2004-2039

Year End	2004	2009	2014	2019	2024	2029	2034	2039
Water Supply	90%	91%	93%	95%	97%	99%	100%	100%
Sewerage	88%	90%	91.50%	93%	95%	97%	100%	100%

Source: Concession Contract with Aguas del Tunari, Annex 6

These charts note commitments to achieve steady increases in supply and connections of water and sewerage.

Arguments for and against the water concession were demonstrative of Kanbur's two tendencies. Proponents of the privatization scheme referred to the expected aggregate and long-term benefits as a justification for the concession's implementation. That is, they displayed an FM worldview. The International Monetary Fund (IMF) "encouraged authorities to continue privatizing public enterprise assets" in order to generate economic growth. They maintained that

Bolivia's four percent real GDP growth was "insufficient for [making] substantial progress in reducing poverty" and that "macroeconomic stabilization" and "structural reforms" such as privatization were essential to improving social conditions.[18] In other words, privatization would enable Cochabamba to finance necessary improvements to its public infrastructure, water included.[19] Given the short life span of the Cochabamba concession, it is impossible to evaluate the long-run, aggregate outcomes from the privatization scheme. In this sense, examples of FM perspectives of the outcomes of the concession do not exist. Nonetheless, comments such as those by the IMF are indicative of a belief that private provision of public water resources can generate significant improvements in water access for the poorest Cochabambinos.

The immediate water rate increases were perceived so negatively by adherents of the CS worldview that the expected aggregate benefits never had the opportunity to materialize. Even prior to the implementation of the water concession, opposition to the concession had already begun, formed largely in response to potential rate hikes. The College of Engineers conducted an analysis which compared the rates under SEMAPA with that of the rates anticipated by Aguas del Tunari. They concluded that, without social welfare in mind, rate hikes would reach upwards of 180 percent for the poorer sectors of the population. Local candidates from six political parties jointly signed an agreement against tariff increases.[20] The sentiment expressed by opponents to the concession reveals a CS worldview. Oscar Olivera, a major leader in the protests against the Cochabamba Concession stated publicly that "water is a right for us, not something to be sold." [21]

The Coordination for the Defense of Water and Life, led by Olivera, called for Cochabambinos to refuse to pay their bills. Ultimately, the dissatisfaction of Olivera and other adherents of the CS worldview prohibited the satisfaction of the FM worldview, as opposition to the short-term costs of the privatization contract made the concession's continuation practically impossible. Thus, only months after its enactment, the water concession was annulled as Aguas del Tunari withdrew from the contract.

Since the cancellation of the concession, much of the academic literature has viewed the immediate water rate increase as a justification for the concession's cancellation. Sarah Grasky of *The Public Citizen* emphasizes the short-term burdens on minimum wage workers who had monthly water bills of twenty dollars or more, despite the fact that they earned sixty-five dollars per month.[22] Emanuel Lobina of The Public Service Research Unit makes similar statements indicative of the CS worldview and focuses on the "price hikes of 220 percent or more," which, in his eyes, generated a "water war." [23]

Grusky and Lobina, though accurate, make no mention of the fact

that water rates were distributed progressively, with lower income households paying significantly less than the figures he presents. They also do not acknowledge that access to clean water has not improved since SEMAPA, the municipal provider, resumed responsibility over water provision. In fact, five years after the cancellation of the concession, half of the 600,000 people living in Cochabamba remain without water connections. Those fortunate to have a water connection, experience intermittent service with access to water for as little as three hours per day. In addition, SEMAPA still struggles with deteriorating infrastructure, as its water filtration system has an obsolete series of eighty-year-old water tanks designed for a much smaller city.[24]

Grusky and Lobina's comments, demonstrative of the CS worldview, focus on short-term empirical outcomes and emphasize the burdens borne at the individual level. In so doing, they neglect Cochabamba's continuing water provision problems typically emphasized by the FM worldview. The fact that these problems persist illustrate the social utility of crafting a concession that satisfies both the FM and CS worldviews. This paper now turns to an examination of relevant theoretical literature in order to ascertain which approaches, if any, best achieve this end goal of satisfying two seemingly competing evaluation perspectives.

Theoretical Literature

Productive and Allocative Efficiency Approaches

Water provision approaches diverge by their emphases on either productive or allocative efficiency. Approaches emphasizing productive efficiency essentially attempt to demonstrate that production is most efficiently organized and implemented by a privatized firm. The reason for this is that competition creates better incentives for managers and workers to minimize costs and improve quality. Public provision, on this account, results in inefficiencies because public enterprises are owned by the state and thus by all citizens. This means that there remains no single observer who has the requisite incentives to monitor the enterprise. However, as Vickers and Yarrow note, unrestrained privatization could generate significant negative externalities. They present a model of private ownership in which the objective function is the maximization of profit. The model includes social welfare externalities that could arise from the enterprise's activities. In the context of water privatization, negative externalities could include service rate increases and positive externalities could include enhanced water quality and subsequent health benefits of cleaner water. Formally, the model is expressed as

$$W = n + E \text{ or } n(x) = W(x) - E(x)$$

where n refers to profit, W refers to welfare, E denotes externalities and x is a vector of decision variables.[25] Accordingly, the left side of the

model can be interpreted as welfare equaling the sum of the company's profit and any externalities associated with that company's operations. On this model, externality effects are influenced by market structure. If the enterprise operates in a competitive market, externality effects are small. However, in a noncompetitive market such as water provision (a natural monopoly), externality effects of private ownership are larger. Cowan notes that water provision is capital intensive and that the average lifespan of assets used to provide water is very long. Accordingly, direct competition for water provision within a particular area "would entail an inefficient duplication of fixed assets."[26] Water and sewerage systems typically have a high ratio of fixed to variable costs because they require extensive underground water pipe networks to deliver the system. Competition would require sharing access to the piped network and given the high cost associated with pumping water through the network, the potential for such competition is small. Thus, a water privatization scheme solely emphasizing productive efficiency would result in immediate rate hikes, violating the first acceptability condition and proving unsatisfactory to adherents of the CS worldview.[27]

Water provision approaches that emphasize allocative efficiency maintain that state ownership reduces many of these negative externalities. The reason for this is that a government run enterprise allows for the pursuit of social objectives, rather than simply the maximization of profits. Vickers and Yarrow model a public decision maker who maximizes an objective function that is the sum of the weighted average of social welfare and the political figures' personal agenda. The model is formally expressed as

$$V = W(x) + \mu P(x)$$

Where x is a vector of decision variables and μ is the weight given to the private agenda, relative to social welfare. W and P refer to the decision maker's concern with social welfare and his or her own personal agenda, respectively. On this model, the political figure will choose the decision that maximizes V, which is subject to the personal weightings given to P and W. Vickers and Yarrow maintain that competition between elected figures will ensure that production and allocation decisions will be made in a way that maximizes social welfare. In other words, in a competitive political market, these managers will be forced to maximize social welfare (W), rather than personal welfare. In this sense, public ownership can effectively counter negative production externalities inherent in natural monopolies.[28]

A central problem with the allocative efficiency approach is that it provides little guidance for the governments of indebted countries with unaccountable political elites, poor credit ratings, and deteriorating water infrastructure. Such governments would not likely have either the administrative or financial capacity to effectively run a water provision

system. The allocative efficiency approach also assumes that private provision inherently involves the complete conveyance of ownership and control to private hands with little opportunity for regulation or government intervention. Externalities associated with water provision may justify government regulation, but not necessarily government control and ownership of water resources.

Furthermore, on both the productive and allocative efficiency approaches, social welfare and decision-makers' objectives diverge.[29] Both the private firm's profit maximizing concerns and the public decision maker's personal agenda run counter to social welfare and are only kept in check by a competitive political or economic market. However, the economics of water provision and the political economy of many developing nations' governments make economic and political competition less likely. The appropriate choice of a water provision approach, therefore, cannot require a mutually exclusive decision between public and private ownership of water resources. Thus, in order to satisfy both the FM and CS worldviews, the possibility of a public-private arrangement with government regulation must be examined.

Complete Contracts Approach

Sappington and Stiglitz (1987) present a "complete contracts" public-private arrangement. They maintain that the government could auction a water provision contract in which the private owner is entitled to receive a payment for the firm's production that exactly equals the social value of that output.[30] In so doing, the private provider would internalize social welfare and thus be compelled to choose a socially efficient level of production. Decisions with respect to production output would be delegated to the private owner who would be paid for the water provision services at a rate that exactly equals the value of that service to the government. This means that the winner of the water concession would choose the level of output that a government would choose. The benefit of this approach is that the objective of profit maximization is now identical with the social welfare objective function.

At least theoretically the Sappington and Stiglitz model achieves both productive and allocative efficiencies and thus satisfies both the FM and CS worldviews. The problem, however, is that their model is impractical and potentially costly. In order for an auction of this kind to be effective, the government must be able to specify in unambiguous terms the social value of output for all possible states of the world such that the contract can be legally binding and enforced by the courts. In other words, the government would need to be able to identify all possible contingencies and agree with the private provider on issues of payment and performance for each of these contingencies ahead of time. Such an approach, therefore, would have significant contractual costs.[31]

There also exist serious problems with respect to implementing, monitoring, and regulating performance. Particularly when water may be valued differently by different consumers, performance is hard to quantitatively measure. Ideally, producer output could be perfectly and costlessly observed by all parties, but, in practice, performance of water provision is difficult to accurately measure. As Batley notes, private sector participation in natural monopolies, such as water, requires substantial government oversight that generates burdensome transaction costs; costs to arrange a contract "ex ante", costs to monitor the contract, and costs to enforce it ex post. Thus, "private sector participation changes the form but not the fact of regulation and raises the question of whether the [government]…is any better as regulator than it was as direct provider."[32]

This inability to monitor water performance could also result in some of the negative externalities mentioned earlier, such as decreased water quality. Governments of developing nations such as Bolivia may not have the administrative capacity to monitor water performance. Without the ability to regulate and monitor water firms' performance, a government cannot ensure that firms are fulfilling their contractual obligations. Nevertheless, despite the problems associated with a complete contracts public-private arrangement, Stiglitz and Sappington's approach demonstrate that some degree of government regulation is necessary for a water provision scheme to be acceptable to adherents of both worldviews.

The Compensation Mechanism

Sappington and Stiglitz have presented an approach that, in theory, comes closest to satisfying the FM and CS worldviews. However, the practical difficulties inherent in their approach make it nearly impossible to implement. As a solution, this paper proposes that a water provision approach that achieves productive efficiency be coupled with a compensation mechanism that maintains allocative efficiency by addressing the negative externalities born by the losers of the particular scheme.

The idea of a compensation principle was first introduced by economist Nicholas Kaldor in the context of the problems that arose from the repeal of the English Corn Laws, import tariffs designed to support domestic producers of corn. When these laws were repealed domestic consumers benefited by being able to buy North American corn at reduced prices, while English land owners and farmers experienced a devaluation of their land and a loss of income. The issue for Kaldor was how to compare the generally positive results for the majority with the losses born by a few. He argued that to conduct such a cost-benefit analysis demanded that the involved parties be treated "in some sense

as equal."[33] However, if the parties are to be understood as equal, the benefits of the majority cannot simply make the costs born by the few an arbitrary matter. The logical consequence of this statement is that in order to justify a particular policy the policymaker must demonstrate that no individual will be in a worse situation as a result of the proposed policy change. In short, for a policy to be justified it needs to generate a pareto improvement. The problem is that even the most sophisticated policy generates some losses, which means that no policy change is justifiable. To overcome this problem, Kaldor maintained that

> ..it is always possible for the Government to ensure that the previous income-distribution should be maintained intact: by compensating the landlord' for any loss of income and by providing the funds for such compensation by an extra tax on those whose incomes have been augmented. In this way, everybody is left as well off as before (...) In all cases, therefore, where a certain policy leads to an increase (...) of aggregate real income, the economist's case for the policy is quite unaffected by the question of the comparability of individual satisfactions; since in all such cases it is possible to make everybody better off than before, or at any rate to make some people better off without making anybody worse off. There is no need for the economist to prove as indeed he never could prove – that as a result of the adoption of a certain measure nobody in the community is going to suffer.[34]

On Kaldor's account, there are two prerequisites for a particular policy to be justified: first, it must produce aggregate benefits for the majority;[35] second, compensation must be paid to the losers of a policy so as to make no individual worse off. Kaldor's compensation principle, therefore, satisfies the pareto criteria mentioned earlier. This is not to suggest that a compensation mechanism will always fully address the losses of each and every individual bearing the brunt of a project's negative externalities. It is simply to state that a reasonable compensation mechanism can ensure a more equitable distribution of the costs and benefits of a policy.[36]

Kaldor's compensation principle, when put into practice, should satisfy proponents of the CS worldview, as compensation will mitigate the immediate negative externalities of the private concession. The FM worldview, on the other hand, should be easily satisfied by the long-term aggregate benefits of the policy itself.[37] In this sense, compensation can be said to achieve three goals: first, it makes water services affordable for low income households; second, and resulting

from the first, it facilitates the government's ability to achieve universal access and broader cost recovery for the private provider; and, third, it garners greater support for the concession from adherents of both tendencies. [38] The importance of the compensation mechanism is that its effectiveness will influence whether the long-term objectives will be met. An ineffective compensation that does not effectively distribute the benefits of compensation will likely not sufficiently satisfy adherents to the CS worldview. Accordingly, this paper will now turn to an assessment of different compensation possibilities and their ability to satisfy the CS worldview.

Compensation Possibilities

In order to formulate an effective compensation mechanism it is important to understand the different ways in which losses can manifest at the individual level. In the case of the Cochabamba concession, there were three different forms of losses allocated to three different groups. First, the exclusivity clause of the concession contract generated losses for alternative and small scale water providers by putting their livelihoods in jeopardy. For years, vendors and neighborhood associations, in response to the historical water scarcity problem, had sold water to poor neighborhoods. This "informal network of small-scale providers were [sic] expected to disappear as Aguas del Tunari expanded its water services."[39] Not surprisingly, water vendors felt marginalized and joined in protest against the concession.

Second, the concession contract marginalized small farmers in the four municipalities in the surrounding area (Quillacollo, Sacaba, Vinto and Tiquipaya) who had been irrigating their crops using underground water resources. For generations, these municipalities had an informal water market based on a traditional system of property rights that operated outside the Bolivian legal framework. In this sense, they were "completely autonomous and independent in their management."[40] Through the years, in response to growing demand for water, SEMAPA began to sink wells in the four municipalities. Aguas del Tunari's exclusive access to provide water resources made null small farmers' pre-existing rights to the groundwater in their area.

Third, low income households perceived that they were being deprived of their access to water. Even though lower income households stood to benefit the most from the contract requirement that Aguas del Tunari expand the water connection network into poorer communities, they wanted water vendors to remain available. Lower income households were concerned that connection installation would be costly and would take some time before completed, leaving them with access to neither vendors nor the network.[41] The potential long term benefits to the majority provided little comfort to those whom

the policy would produce the most immediate costs. In other words, the potential outcomes as understood from the FM worldview did not address the potential social and economic dislocations evident from the CS perspective. The World Bank's insistence that privatization would lead to increased access to clean water and decreased burdens on the municipal government failed to persuade those of the CS perspective. This is not to suggest that there was a strong element of miscommunication between opponents and proponents of the privatization scheme. Rather, the two groups valued policy outcomes differently. The FM idealized aggregate outcomes, while the CS worldview emphasized immediate, disaggregated outcomes at the individual level.

These examples indicate that a successful[42] compensation mechanism must address both monetary and non-monetary losses stemming from a water privatization scheme. To effectively satisfy the CS worldview, compensation must address three main sources of costs or losses: high service rates, connection costs for low income households previously not connected to the network, and other monetary and non-monetary costs that are context specific and vary depending on the concession.

Compensation for Consumption

To determine the appropriate compensation for rate increases for low income households, burden limits or upper thresholds on the proportion of income that household can afford to meet a specific basic need should be established. In the case of water supply and sanitation, a burden limit of five percent has been widely adopted as a rule of thumb for assessing affordability.[43] Empirical evidence indicates that in Latin America, Eastern Europe, and South Asia, average households spend one to two percent of their income on water service. Poor households spend slightly more with one to three percent of their income being spent for water supplies. Estimates of monthly subsistence consumption for those with a pre-existing private connection to the network range from eight cubic meters per month (which is the equivalent of fifty liters per capita per day for a family of five and thought to be the minimum amount to meet basic health and hygienic requirements) to sixteen cubic meters per month (which is the equivalent of 100 liters per day for family of five and thought to be a moderate level of consumption for most urban households.[44] Furthermore, U.S.$ 0.40 per cubic meter is assumed to be the minimum amount to cover operational and maintenance costs. U.S.$ 0.80 per cubic meter is regarded as the cost that enables firms to recover a portion of the capital costs as well. These figures enable us to reach estimates for monthly costs of subsistence water consumption

that range from U.S.$ 3.20 to U.S.$ 12.80).[45]

These estimates can be compared to the tariff structure of the Cochabamba concession. For water and wastewater services, the poorest forty-two percent of the population paid U.S.$ 0.43 per cubic meter, the middle income (thirty-eight percent of population) paid U.S.$ 0.68 per cubic meter, and the wealthiest twenty percent of Cochabambinos paid U.S.$ 1.20.[46] According to Lobina, these tariff rates amounted to over twenty percent of average household income, which is well in excess of the five percent upper threshold on water tariffs.[47] Thus, an appropriate compensation rate would match the gap between the five percent threshold and the current percent of household income going toward water expenditures.[48]

This analysis offers a general understanding of how much to compensate low income households. However, it does not indicate how to identify and target these households for purposes of compensation. One common compensation mechanism is a quantity targeted consumption subsidy. Quantity targeted subsidies assume that poor households are small volume consumers. This would mean that targeting a subsidy to small consumers is equal to subsidizing the poor. However, quantity based consumption subsidies have been shown to be ineffective in targeting compensation benefits to the poor. In a study of four cases of quantity targeted subsidies in Bangalore, Cape Verde, Kathmandu, and Sri Lanka, not one subsidy program achieved a progressive or neutral distribution. In each case the share of the benefit of the subsidies for the poor was smaller than their share of the population.[49]

The reason why quantity targeting does a poor job of delivering subsidies to the poor is that it is only able to provide subsidies to those with pre-existing connections and meters. This was true in the case of the Cochabamba concession, in which the poorest households were not connected to the network and bought water from tank vendors. Only fifty-seven percent of the population had connections, which means that forty-three percent of the population could not be targeted for consumption subsidies. Several studies indicate that coverage is considerably lower among poor households.[50] This means that quantity targeting disfavors the very individuals for whom the subsidy is designed to benefit. Thus, for practical reasons, quantity based consumption targeting would not sufficiently satisfy adherents of the CS worldview.

Another option is to geographically target the poor. Geographical targeting isolates neighborhoods, cities, or regions where poor households are concentrated. Subsidies would then be targeted to those regions. Targeting by geography is effective if poverty is highly spatially correlated, such as in cases where very poor families live in

the same neighborhood. Thus, the applicability of geographic targeting will depend on the particular concession. That being said, geography is simply one categorical variable that could be used as a predictor of poverty. It is the task of the policymaker is to identify the categorical variable that would best serve as a predictor of poverty for each particular instance.

A final possibility and an alternative to categorical targeting is a means-tested subsidy. Means testing is simply an investigative process that determines whether an individual or group is entitled to receive government benefits. It can be used in combination with categorical targeting or simply as a stand alone way of identifying subsidy beneficiaries. A commonly cited example of a means-tested subsidy is the Chilean water subsidy program. In order to be eligible for a subsidy, a Chilean household must satisfy two criteria: first, the household must not have any arrears with the water company and second, it must be among the poorest twenty percent of households in the region.While results indicate that the subsidy only reaches nineteen percent of poor households, poor households make up the majority of the beneficiaries. The poorest forty percent of households in the country account for sixty-five percent of the benefits of the subsidy. This means that the allocation of the benefits from the subsidy is highly progressive with poor households receiving more than 1.5 times as large a share of the subsidy benefits as they would normally have received under a random allocation.[51] This evidence suggests that means testing may prove effective in satisfying the CS worldview. However, means testing increases administrative costs. Accordingly, the policy maker needs to evaluate the costs of the compensation program versus its expected benefits when deciding which consumption subsidy program to pursue.

Compensation for Connection Costs: Connection Subsidies

While quantity-targeted consumption subsidies have been shown to be ineffective in allocating the benefits to unconnected households,the opposite is true of connection subsidies. Connection subsidies can be defined as compensation payments for the costs of connecting to the water network. This would be a one-time lump sum payment for the installation of necessary piping and other infrastructure. Connection subsidies typically have much better targeting performance because unconnected households are the sole potential beneficiaries of connection subsidies.[52] Empirical data demonstrates that connection subsidies are also socially progressive. In a study of connection subsidies in Sri Lanka, Bolivia, and Paraguay, Ajwad and Wodon found that connection subsidies resulted in expanded water access for poor households. More importantly, they also discovered that connection subsidies

disproportionately benefited the poor because unconnected households were generally low income households.[53] This has implications for the targeting of consumption subsidies, as unconnected households appear to be a good indicator of poverty.[54]

It is true that connection subsidies only generate a one-time benefit. However, they generate a long term positive outcome that may exceed the direct benefit of the subsidy itself: accessibility to clean water and ensuing consumption subsidies. The coupling of consumption and connection subsidies often results in reduced household spending on water with increased consumption. A study by Bardasi and Wodon in Niamey, Niger found that the poor would save approximately U.S.$0.75-$1.00 per cubic meter by connecting to the water network.[55] A consideration of the value of the connection must extend beyond the connection cost alone. What is so effective about a connection cost, therefore, is that it satisfies the CS worldview, by reducing the immediate costs of connecting to the network, and the FM worldview, by laying the groundwork for increased access and consumption of clean water.

Compensation for Non-Monetary Costs

Water concessions may also generate additional social dislocations that are not easily quantifiable. There is no clear way to address these concerns. Nonetheless, an effective policymaker should familiarize herself with the social, cultural, and political factors specific to the respective region. If extensive non-monetary losses result from a policy, the policy maker should determine whether monetary or non-monetary compensation is required.

Criticism

One potential objection to the use of a compensation mechanism, as employed in the context of water privatization, is that it requires a level of financial resources not often available to the governments of indebted developing countries. Nations such as Bolivia turned to private utility management for the very reason that they had little or no financing available for necessary investment in public infrastructure. This objection presents an almost tragic picture for severely indebted countries with few financial resources, poor credit ratings, and insufficient infrastructure. Private provision may be their only viable means for improving access to clean water. However, if citizens will not tolerate serious short-term hardships and compensatory efforts are beyond the reach of the government, then the only viable option may be rejected by the very people for whom the project's benefits are intended.

There are two reasons why the economist or planner must reject

this line of thinking: first, it should be axiomatic that we do not accept human impoverishment (in this case with respect to water) as inevitable; second, there exist several potential solutions to this problem. For example, loans from the IMF could be used to contribute to these compensation mechanisms. In the case of Bolivia these loans were conditional upon the privatization of much of its public infrastructure. Thus, using loan money to compensate individuals for losses resulting from privatization would be in keeping with the specification of the loan agreement. Loan money could be used to build a government's regulatory and administrative capabilities. As has been shown, much of the effectiveness of the compensation mechanism is determined by the government's ability to accurately identify the intended beneficiaries of a compensation program.

A second objection to compensation mechanisms is that they give incentives for households to increase their consumption of water. Many developing countries have scarce water resources and increased levels of consumption could prove fundamentally unsustainable. However, this line of argument does not acknowledge the impact of the pricing mechanism on institutional consumers, who consume considerably more water than households. The socially progressive nature of the compensation program would mean that large consumers of water are not eligible for consumption, connection, or other subsidies. In fact, their increased rates would likely help subsidize rates for small and low income consumers. Thus, while small, low income households would consume more, these increases would hopefully be offset by disproportionately greater decreases in consumption from large consumers.

Finally, this paper has assumed that the losers of a privatization scheme are the poor and that compensation would be directed to low income households. However, consider a situation in which the middle and upper classes are the losers of the policy, while a much larger lower class gains from the policy change. In this instance, satisfying the CS worldview may require compensating higher income households. Such compensation may require a form of redistribution in which some of the gains to the poor are given to the richer portions. A redistribution program that sends resources towards the rich may seem ethically wrong, but the program may be necessary to garner political support for the policy. In other words, compensating the upper and middle classes may be necessary to generate support for the water concession. The policymaker may have to decide between the ethical and the politically intelligent decision.[56] Nonetheless, such complex situations should not regarded as an argument against compensation, as it may be the only viable option for a government to obtain external financing of its public infrastructure.

Conclusion

The economics of water make its privatization somewhat more difficult than the privatization of other utilities. Externalities ensuing from a natural monopoly such as water demand government intervention (though, not necessarily government ownership). Furthermore, the technical nature of water provision makes it increasingly difficult to negotiate and monitor a water concession contract. Finally, issues with respect to pricing and metering make the design of a regulatory arrangement more complicated. All that being said, these problems should not prohibit the construction of a welfare enhancing water privatization scheme.

This paper has shown that a private provision model coupled with an effective compensation mechanism can produce a pareto improvement that satisfies adherents of both the Civil Society and Finance Ministry worldview. In the context of water provision, the CS worldview should be satisfied by the immediate compensation provided to those bearing the costs of the change to private water provision. The FM worldview, on the other hand, should be satisfied by the long-run aggregate benefits in the form of increased access to clean water. The challenge of the policymaker, therefore, is to implement a policy that generates real long-term benefits and to accurately target compensation so that it most effectively mitigates the short term costs. In so doing, the respective interests of both worldviews can be reconciled and a more stable water concession scheme can be implemented.

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Endnotes

1 This is not to suggest that reconciling differences between proponents and opponents is either a necessary or sufficient condition for a stable and durable water provision scheme. On the one hand, a government could exercise force to restrain opponents of the scheme. On the other hand, instability could remain despite reconciliations as other indirect factors could play a role.
2 Galiani, Gertler and Schargrodsky "Water for Life: The Impact of the Privatization of Water Services on Child Mortality," *Journal of Political Economy*, (January 2003): 20-25.

3 The Public Citizen is a national, non-profit consumer advocacy organization based in Washington, D.C. Its main issues are government accountability, global trade, public health, and campaign finance reform, among many others. The organization was created in 1971 by Ralph Nader. As part of its work, it publishes an online magazine through its website.
4 "Water Privatization Fiascos: Broken Promises and Social Turmoil," *Public Citizen* (March 2003). http://www.citizen.org/documents/privatizationfiascos.pdf (accessed 2 March, 2008). Arguments against other water privatization schemes illustrate similar CS tendency worldviews. For example, arguments forwarded by Vendana Shiva, an opponent of privatization, are indicative of the CS tendency. She writes:

> In Casablanca, consumers saw the price of water increase threefold [after privatization]. In Britain, water and sewage bills increased 67 percent (Vendana Shiva. *Water Wars: Privatization, Pollution and Profit*. Cambridge: South End Press, (2002), 91.

5 An example of this criticism can be found in John A. Scanlan and O.T. Kent. "The Force of Moral Arguments for a Just Immigration Policy in a Hobbesian Universe: The Contemporary American Example" in Mark Gibney, ed. *Open Borders? Closed Societies? The Ethical and Political Issues*.
6 For example, if we deem that an individual has a right to speak her mind freely, we do not mean to say that she has this right only so long as this is in the best interests of society. Rather, we mean that she has this right even if this would not be in the general interest.
7 Ana Elena Obando, "Water and Water Privatization." *WHRnot,* (2003) http://www.whrnet.org/docs/issue-water.html (accessed 2 March, 2008).
8 Theordore Lowi, "New Dimensions in Policy and Politics." (2005) Tatlovitch, Raymond and Daynes, Byron W. *Moral Controversies in American Politics: Third Edition*. New York: M.E. Sharp, xxi – xxiii.
9 Ravi Kanbur, "Development Disagreement and Water Privatization: Bridging the Divide," Working Paper. (May 2007): 8.
10 Ibid., 6.
11 Ibid.
12 It must be noted that a complete satisfaction of these conditions does not preclude opposition to a privatization model, as principled opponents could remain.
13 Cochabamba is a city in Central Bolivia with a population of more than 1,000,000 people.
14 Ministerio de Capitalizacion, *Report on the legal feasibility of private sector participation in SEMAPA*. La Paz. (1997).
15 The importance in outlining these facts is that they are typical of many developing nations who are in need of improvements to water and other utility infrastructure. Consider the context of the water sector reforms in Mexico City in the early 1990s. Mexico had seen a four percent decrease in GDP and the annual inflation rate had risen to over 100 percent. Mexican water and sanitation infrastructure had also experienced similar problems to those faced by Cochabamba: inadequate maintenance and operation of provision, high rates of unaccounted for water, poor collections performance, growing water scarcity, increased demand and continuing financial losses (Brook, Haggerty and Zuluaga (2002), 147).
16 Nickson and Vargas, "The Limitations of Water Regulation: The Failure of

the Cochabamba Concesión in Bolivia," *Bulletin of Latin American Research*. Vol. 21, (December 2002): 137.
17 Superintendencia de Sanamiento Basico, "Informe sobre el contrato de concesion para el aprovechamiento de agua y los servicios de agua potable y alcantarillado sanitario de la ciudad de Cochabamba," La Paz: (2000).
18 International Monetary Fund, "Public Information Notice: IMF Concludes Article IV Consultation with Bolivia." www.imf.org/external/np/pfp/bolivia/index.htm (accessed 2 March, 2008).
19 The World Bank's push for privatization was also rooted in Cochabamba's inability to raise public funds or foreign direct investment. The country had and continues to have a very poor credit ranking. Bolivia is rated B1 by Moody's and B+ by Standard and Poor's, both of which are defined as below average credit rankings.
20 Assies, "David versus Goliath in Cochabamba: Water Rights, Neoliberalism and the Revival of Social Protest in Bolivia," *Latin American Perspectives*, 30, no. 3, (2003): 16.
21 Olivera, "Cochabamba! Water War in Bolivia!", (2004): 9-12
Law 2029 stipulated that concessions were for a period of forty years and that they could be granted to any institution with legal status. It laid out conditions for granting concessions that appeared to favor large enterprises that functioned according to market criteria. The most controversial part of the law was the exclusivity clause which gave concessionaries exclusive rights over the concession area, marginalizing existing local organizations who had previously provided water. (Assies, 16).
22 Sara Grusky, "Privatization Tidal Wave: IMF/World Bank Water Policies and the Price Paid by the Poor." http://multinationalmonitor.org/mm2001/01september/sep01corp2.html, (September, 2001).
23 Lobina (2008), 2.
24 Jaun Forero, "Bolivia Regrets IMF Experiment." *International Herald Tribune*. (December 14, 2005), http://www.iht.com/articles/2005/12/14/business/water.php?page=2 (accessed April 29, 2008).
25 John Vickers and George Yarrow, "Economic Perspectives on Privatization." *Journal of Economic Perspectives*, (1991): 113.
26 Penelope J. Brook Cowen, "Getting the Private Sector Involved in Water – What to Do in the Poorest of Countries." The World Bank Group. *Public Policy for the Private Sector*. (1997), Note No. 102: 15-16.
27 Unrestrained privatization also increases the risk of non-monetary externalities such as decreased access to clean water and environmental consequences, such as the depletion of aquifers. Such health and environmental externalities are an additional argument against wholly private provision of water.
28 Vickers and Yarrow, 113.
29 Klaus M. Schmidt, "The Costs and Benefits of Privatization: An Incomplete Contracts Approach" *Journal of Law, Economics and Organization*. 12, no. 1 (April 1996): 2.
30 This can be expressed formally as:P(Q) = V(Q) in which P is the payment from production and V is the valuation of the output.
31 David E. Sappington, and Joseph E. Stiglitz, "Privatization, Information and Incentives." *Journal of Policy Analysis and Management*. 6, no. 4, (Summer 1987): 574.

32 R. Batley, "The Consolidation of Adjustment: Implications for Public Administration," *Public Administration and Development* 14, no. 5 (November 2006): 489-506.
33 Nicholas Kaldor, "Welfare Propositions of Economics and Interpersonal Comparisons of Utility." *Economic Journal*, 49, no. 195, (1939): 550.
34 Ibid.
35 Kaldor's statement does not explicitly claim that positive aggregate outcomes are a necessary condition for a justified policy. The first requirement is just a reflection of our basic intuition that a good policy produces results that are, on average, good.
36 Kaldor's compensation principle is conditional upon the government's ability to provide such compensation. If the government can compensate the losers of a project so that they are no worse off, then they should do so. This is simply an application of the basic ethical axiom of "ought implies can." In other words, an individual is obligated to perform an action if and only if they are capable of doing so. The government, therefore, is obligated to compensate if and only if it is capable of doing so.
37 Kanbur, 32.
It is important to note that such reasoning assumes a genuinely positive outcome.
38 It is also important to note that the existence of a compensation mechanism places certain constraints on the water provision model itself. The model would require some degree of government regulation so as to minimize the amount to which the government is compensating individuals for their losses. A fully unrestrained privatization scheme would produce greater costs for the government (than a more regulated scheme) because large negative externalities would require large government compensatory expenditures.
39 Nickson and Vargia, 142.
40 J. Barragan, C. Crespo, G. Donoso, and J. Escobar, *Mercados e institiuciones de aguas en Bolivia*, (La Paz: UDAPE, 1998).
41 Ibid.
42 Success, in this instance, can be defined as the ability to satisfy adherents of the CS worldview tendency.
43 Gomez-Lobo and Contreras (2003) note that the Chilean government adopted the 5 percent burden limit when calculating the size of transfers needed under its direct subsidy program.
44 Komives, et. al., *Water Electricity and the Poor*, 43.
45 Ibid.

Environmental Decision-making under Scientific Uncertainty

Review and Implications of the Precautionary Principle in U.S. Case Law

Tatyana B. Ruseva and Joice Y. Chang

ABSTRACT

This paper examines the implications of the precautionary principle in the context of U.S. case law. First, we provide an overview of past and current uses of this principle. Next, we analyze how the courts have applied the principle. Based on this analysis and guided by the central pillars of the precautionary principle, we seek to understand the impacts of the application of the principle in case law on judicial, administrative, and legislative environmental decision-making. We also discuss the potential implications of the principle on the standards of liability, the burden of proof, and the overall environmental quality.

New public demands and needs emerge in the context of multiple biophysical and socioeconomic changes. Key among them is the need for improved decision-making in the face of scientific uncertainty.[1] This is particularly valid in the area of environmental policy-making, where problems, such as climate change, genetically modified crops, and public health often require improved understanding of cause-and-effect relationships, timing, and magnitude of impacts.

This paper explores how courts in the United States have provided guidance about environmental decision-making under conditions of scientific uncertainty (1970s -2007). As an approach to environmental decision-making, the precautionary principle underscores the tight and often challenged relationship between science, policy, and society.[2] Below, we offer two commonly-cited definitions of the precautionary principle:

"Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." [3]

"When an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically." [4]

Precaution is a widely applied principle in international environmental law and a constitutional norm of European Union (EU) law and jurisprudence. In the U.S., the precautionary approach has been a general notion underlying most environmental legislation. While the principle does not have the official support of Congress and the Environmental Protection Agency (EPA), there exist policy prescriptions that establish a procedural obligation to act in a precautionary manner, such as NEPA's requirement for conducting Environmental Impact Assessments (EIAs).[5]

Given the legislative and executive branches' stance on the use of the precautionary principle in environmental law, we should expect the courts' position to be along the same lines. Indeed, a survey of relevant Supreme Court cases does not suggest otherwise. However, several lower court decisions, particularly from the 1970s and early 1980s, provide evidence that some courts were extending the obligation of industries to act in a more precautionary manner. Such judicial evidence suggests that both governments and industries make decisions in the face of imperfect knowledge or uncertain risk that ultimately affect human health and the environment. The increased application of the precautionary principle by private and public actors, however, has not been paralleled by similar attention by academic scholars. There exists little analytical work on the type of patterns and implications from the use of the precautionary principle.[6]

This paper seeks to address this void by providing a review and analysis of the observable uses of the precautionary principle. Much of the literature underscores the importance of the decision context, within which the precautionary principle is being utilized or interpreted. Precaution has different meanings for the different actors involved in environmental decision-making.[7] In this paper, we examine the implications of the precautionary principle in the context of U.S. case law. A review of the invocation of the precautionary principle in representative U.S. court decisions is important because it illustrates the implications of its increased use on other policy-makers. Judicial interpretations set precedents that guide administrative, legislative, and judicial policy-makers in making decisions under scientific uncertainty. In addition, the number and scope of cases that make use of the precautionary approach is an indication of the attention and importance of the principle in U.S. law.

The paper is organized as follows: First, we provide an overview of past and current uses of the precautionary principle. The central pillars and elements of the principle are examined. Next, we analyze how the courts have applied the precautionary principle both directly and indirectly, using the following set of criteria: issue area (e.g. air pollution, water pollution); use of the elements of the precautionary

principle; and, version of the principle (weak, moderate, strong). Based on this analysis and guided by the central pillars of the precautionary principle, we explore its implications on the standards of liability, the burden of proof, and overall environmental quality.

Development and Use of the Precautionary Principle

This section provides an overview of the meaning and use of the precautionary principle in international and domestic environmental law. The roots of the principle are found in German environmental law, and specifically in the so-called *Vorsorgeprinzip* or *foresight principle.*[8] Over the past twenty to thirty years law-makers have made diverse use of the term 'precaution' in national and international legal instruments.

Understanding the Precautionary Principle

There is no single definition of the precautionary principle. In fact, as scholars note, its meaning "remains surprisingly elusive."[9] There are, however, a set of functional elements and a conceptual core that define the precautionary principle.

First, the principle establishes the "philosophical authority" to make collective choices in the face of scientific uncertainty about the cause-and-effect mechanisms, the extent, and timing of environmental harm.[10] In a number of influential cases, federal courts in the U.S. have "built a notion of precaution..., allowing or requiring regulation on the basis of conservative assumptions" (e.g. *Lead Industries v. EPA*).[11] Courts, however, have refrained from explicit use of the term 'precautionary principle'.

Second, the conceptual core of the principle can be described in terms of four central components: (i) A requirement to take preventive action in the face of scientific uncertainty (i.e. lack of cause-and-effect knowledge); (ii) Reversal of the burden of proof in litigation (i.e. shifting the burden of proof to the proponents of an activity); (iii) Duty to explore the range of possible alternatives to the potentially harmful actions; (iv) Increased commitment to public participation in decision-making.[12]

Third, the meaning of the precautionary principle can be better understood by juxtaposing it to other principles of environmental policy. For instance, based on the distinction between risk and uncertainty, there is a differentiation between the principle of prevention and the precautionary principle. Preventive measures presuppose that the probability of environmental risk can be calculated (e.g. based on science, technical control, or experience). There can be an objective risk-assessment based on known cause-and-effect relationships for

environmental problems (e.g. chronic air pollution), which can serve as the basis for preventive policies. Precaution, on the other hand, suggests that the probability of environmental risk cannot be irrefutably demonstrated and calculated; that is, scientific knowledge is not at a level that allows "the veil of uncertainty to be lifted."[13] For precautionary environmental policies, it is sufficient that risk be anticipated, not assessed. Below, we review the use of the precautionary principle in international, European Union (EU), and U.S. law.

The Precautionary Principle in International and EU Law

The precautionary principle is a leading norm in the field of international environmental law. As John Applegate, Professor of Law at Indiana University, acknowledges, "The precautionary principle has by now attained the status of a fixture in international environmental lawmaking."[14] It is an established part of international customary law, and is reflected in the texts of international declarations and agreements.

As a general principle of international law, precaution belongs to the body of international customary law. It prescribes a duty to foresee and assess environmental risks. That is, even if there is incomplete or no information on an environmental threat, sovereign nation states have an obligation to take precautionary action to forestall damages. Lack of full scientific certainty is not an excuse for the lack of action. The principle derives from state practice and *opinio juris*, and is currently a norm widely accepted by nation states.

The precautionary approach is also reflected in the texts of numerous international treaties, among which the 1985 Vienna Convention for the Protection of the Ozone Layer, the 1991 Bamako Convention on Hazardous Waste in Africa, the 1992 Convention on Biological Diversity, the 1997 United Nations Framework Convention on Climate Change, the 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic, and others. The most commonly cited definition of the principle comes from the 1990 Bergen Declaration on Sustainable Development adopted by the United Nations Economic Commission for Europe (ECE):

> In order to achieve sustainable development, policies must be based on the precautionary principle....Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.[15]

An important contribution of the principle to the field of

international environmental law is the reversal in the traditional version of burden of proof. States are not required to establish proof of environmental harm before taking regulatory measures.[16]

Finally, a number of non-binding international instruments also make explicit use of the precautionary approach (e.g. Agenda 21, The Statement of Forest Principles, the 1992 Rio Declaration). The most authoritative formulation of the duty to foresee and assess environmental risks in environmental decision-making is found in Principle 15 of the 1992 Rio Declaration of the United Nations Conference on Environment and Development:

> In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.[17]

Overall, the principle enjoys an air of generality, ambiguity, and lack of operationality, characteristic of international legal instruments.

In the context of European Union law and jurisprudence, however, precaution is a constitutional principle.[18] The 1992 Maastricht Treaty adopts it as the official approach to environmental decision-making within the Community (EC Treaty Article 174(2), 1993):

"Community policy on the environment…shall be based on the precautionary principle."[19]

The precautionary approach is embedded in a wide range of EU Directives (e.g. testing of new chemicals, genetically modified organisms, admissible concentrations of pesticides in drinking water, etc.). Since the early 1990s, the European Union has become a leader in employing precautionary regulatory measures to environmental quality and human health.[20] This has been channeled through three major functions embodied in the precautionary principle.

First, the principle enables and binds environmental regulators to act in the face of scientific uncertainty or risk. Second, by placing the burden of proof on the regulated entities (i.e. to show that a certain product is safe for the human health and environment), the principle establishes a certain "pre-marketing authorization" procedure. Third, the principle acknowledges the role of the courts in channeling public accountability and citizens' control over regulatory decision-making.[21]

The Precautionary Principle in United States Law

In contrast to its status in international and EU law, the precautionary principle occupies a somewhat ambivalent role in the United States legal

system.[22] At the same time, in the words of James Cameron, currently Vice Chairman of Climate Change Capital and a leading expert in environmental law, "no country has so fully adopted the essence of the precautionary principle in domestic law as the United States."[23] The spirit of precaution runs as a leitmotif in the so-called "first-wave" of environmental statutes adopted in the 1970s: the National Environmental Policy Act (NEPA 1969), the Clean Air Act (CAA 1971), and Clean Water Act (CWA 1972), to name a few.

To illustrate, NEPA's requirement for conducting Environmental Impact Assessments (EIAs) establishes a procedural obligation to act in a precautionary manner (Cameron 1999). Similarly, the CAA adopts the term "adequate margin of safety" as a regulatory guideline for determining the allowable levels of criteria pollutants (e.g. SO_2, NOx). The CAA follows a precautionary approach as evidenced in the rulings of U.S. federal courts (*Ethyl Corp. v. EPA; American Trucking Associations Inc. v. EPA)*.[24]

Since the 1980s, precautionary approaches to environmental management have been characterized by "growing suspicion and ill-concealed impatience" from U.S. policy-makers.[25] This can be explained with the dominant subscription to cost-benefit and market-oriented values by U.S. policy-makers.[26]

While precautionary ideas are found in multiple environmental, as well as health and safety laws in the U.S., no general definition exists. According to Sheila Jasanoff, Professor of Science and Technology Studies at Harvard University, precaution has different meanings for the different actors involved in environmental decision-making.[27] The most commonly referenced formulation of the precautionary approach comes from the 1998 Wingspread conference held in Racine, Wisconsin:

"When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically."[28]

In the context of U.S. law, the precautionary approach exercises two normative functions: a prudential and a moral obligation.[29] While the prudential function reflects the obligation to act within the scope of existing knowledge, i.e. "what are prudent ways to behave within the limits of available knowledge and experience," the moral obligation suggests "the correct ways to behave within a framework of highly valued social norms and conventions" (similar to the Hippocratic Oath).[30] It is the prudential side of the principle that has been subject to contestation over time. Professor Jasanoff writes:

> In the generation since the enactment of NEPA, both the prudential and the moral component of the precautionary ideal have been substantially watered down in the United States, the former through bureaucratic responses to regulatory pressures and the latter through the very judicial system that had

once been a staunch ally of environmentalism.[31]

The analysis that follows seeks to illustrate the above claim, by examining representative environmental cases in U.S. case-law. Before that, we lay down the evaluative framework used in our analysis.

Analytical Framework

The diverse formulations of the precautionary approach in domestic and international legal instruments, as well as in the academic and advocacy literature, have given rise to different analytical versions of the principle. In this section, we focus on only few of them, namely, the central elements and versions of the precautionary principle. We then analyze a set of representative U.S. court decisions regarding precautionary approaches to environmental policy-making.

Elements of the Precautionary Principle

Professor Applegate outlines four central elements of the precautionary principle, which serve as the basis for the analytical framework of this paper.[32] In particular, the four elements include trigger for regulatory action; timing of the regulatory action; the nature of the regulatory response; and, a set of regulatory strategies.[33] Table 1 below summarizes the key elements of the principle.

Table 1: Elements of the Precautionary Principle

Element	*Description*
Trigger	Potential serious or irreversible environmental harm.
Timing	Anticipatory action, before causation can be scientifically established.
Response	Total avoidance; Measures to minimize or mitigate harm;
	Study alternative with an eye to prevention.
Strategy	Bans and phase-outs; Pollution prevention; Polluter-pays approach; Environmental impact assessment; Reversed burden of proof; Generic regulation and regulation of surrogates.

Source: Applegate, 416.

The four elements are linked in a logical sequence based on their invocation. The precautionary principle is first triggered by the recognition of a serious or irreversible environmental harm associated with a particular activity or substance.[34] There is substantial debate in the literature regarding the potential for harm, the scope and seriousness of the environmental damage associated with the activity.

There is no established standard for what constitutes "serious and irreversible harm." What is commonly agreed upon is that regulation of the environmentally-damaging activity is necessary.

The timing of the regulatory action constitutes the second element of the precautionary principle. The key characteristic is that regulation is anticipatory or ex ante; that is, it takes place "before the casual relationship between the activity and harm has been fully proven."[35]

Third, the regulatory response needs to correspond to the nature of the identified environmental hazard. A range of possible regulatory approaches has been suggested. At the extreme are decisions to completely ban or phase out the environmentally-harmful substances and/or activities. More middle-ground approaches constitute mitigation measures and cost-effectiveness studies.

Finally, the proposed regulatory responses can be implemented in a number of different ways (e.g. via legal requirements). The regulatory choices or strategies used to implement the precautionary principle are the fourth element in Professor Applegate's framework.[36] The scope of regulatory strategies mirrors, and at the same time, extends the range of responses mentioned above: bans and phase-outs, environmental impact studies, pollution prevention or internalization of the socially- and environmentally-harmful effects by the polluter (polluter-pays-principle), reversed burden of proof, as well as generic regulatory measures (Table 1). The feature, common to all of these strategies, is ex ante regulation.

The four elements of the precautionary principle provide one of the criteria used in our evaluation of U.S. case law. The other criterion is supplied by the different versions of the principle.

Versions of the Precautionary Principle

A common distinction exists between a weak and a strong type of precaution.[37] The weak version of the precautionary principle justifies regulation even if there is no definite evidence of environmental harm.[38] Principle 15 of the 1992 Rio Declaration is illustrative of this weak approach to precaution, which permeates most international environmental declarations. The strong type of the principle is characteristic of the European legal system, where "a margin of safety" is an integral part of all regulatory decisions.[39]

Richard B. Stewart, Professor of Law at New York University, proposes a typology based on four conceptions of the precautionary principle.[40] These versions are suggested as a useful heuristic in analyzing and evaluating the principle. The main criterion is the level of uncertainty of environmental risks. In particular, the four versions of the principle are:

(*1*) *Non-preclusion precautionary principle* – Uncertainty should

not preclude regulatory decisions about activities, which pose a risk of substantial harm.

(*2*) *Margin of safety precautionary principle* – Suggests that regulators first establish the maximum "safe" level of an activity, and then limit such activities to levels below the recorded "margin of safety."

(*3*) *Best available technology precautionary principle* (BAT-PP) – In the face of a serious but uncertain risk, regulators should impose Best Available Technology (BAT) measures, unless the proponent of the activity shows that no substantial risk exists.

(*4*) *Prohibitory precautionary principle* – Where there is an uncertain but serious risk of harm, the activity should be prohibited, unless the proponent shows that no appreciable risk exists.[41]

The first two types are consistent with the weak version of the precautionary principle: "they do not mandate regulatory action and do not make uncertainty regarding risks an affirmative justification for such regulation."[42] The third and fourth types represent stronger versions of the principle. The BAT-PP and the prohibitory precautionary principle "make the existence of uncertain risks of significant harm both a sufficient and mandatory basis for imposing regulatory controls."[43] The strong versions of the principle have been critiqued for their failure to "provide a conceptually sound or socially desirable prescription for regulation."[44]

Based on the above perspectives, and for the purposes of our analysis here, we like to differentiate between three versions of the precautionary principle, specifically: weak, moderate, and strong. An important caveat is that these three versions represent points along the continuum of precaution or precautionary-based regulatory responses.

In the weak approach to precaution regulatory measures are prescribed, even if there is no decisive evidence of environmental damage. This version assumes no specific regulation is in place to forestall human and/or environmental harm.

The moderate version of the principle, as we see it, is consistent with the existence of some protective (regulatory) legal measure (e.g. NEPA), which places the burden of proof with the regulator.

Finally, the strong version is based on existing regulatory measures that seek to control or prevent potentially harmful activities and substances. In our view, the strong precautionary idea is consistent with a shift in the burden of proof. In particular, the risk- or damage-producer is expected to bear the responsibility of demonstrating that the proposed activity or substance is harm-free.

Analysis of the Application of the Precautionary Principle in U.S. Case Law

In this section, we analyze how U.S. courts have applied the precautionary principle between 1970 and 2007. As discussed previously, we distinguish between three versions of the principle (which are really three points on a continuum of precautionary-based responses): (i) strong; (ii) moderate; and, (iii) weak. The strong version has two elements. First, it is the responsibility of the risk-producer to prove that the proposed activity or substance is harm-free. Second, it is based on some existing regulatory measure that is preventive in nature. The moderate version of the principle, likewise, is consistent with a protective regulatory measure. Unlike the strong version, however, this one places the burden of proof on the regulator. Under the weak version, no regulations exist explicitly to prevent environmental damage, though precautionary regulatory measures are called for.

Table 2 examines how U.S. federal and state courts have applied the precautionary principle both directly and indirectly. The analysis employs the following set of criteria: (i) issue area (NEPA, CAA, CWA, FIFRA, OSHA, etc.)[45], (ii) reference to the elements of the precautionary principle (as per Table 1 above); and (iii) which version of the precautionary principle is referenced (weak, moderate, or strong).

The cases in Table 2 were chosen with the following method. First, we read through the few cases (e.g. *Reserve Mining* and *Ethyl Corp.*) that had previously been cited and discussed by other scholars. After doing so, we had a better understanding of how courts may have directly and indirectly applied the precautionary principle. From our reading, then, we constructed a list of search terms. We used Lexis-Nexis to search for relevant cases. First, we restricted our searches to environmental cases. Second, we restricted our dates to be between 1970 and 2007.[46] The total number of cases from this search was 6,698. We then went through the overviews of each case to determine whether they are relevant. Out of these cases, only the 17 cases in Table 2 were truly germane for our analysis of how courts have applied the precautionary principle.

Table 2: Overview of the Use of Precautionary Principle (PP) in Court Cases

Case Name Citation	Issue Area	Elements of PP	Version of PP
Calvert Cliffs Coordinating Committee v. AEC 449 F.2d 1109 (D.C. Cir. 1971)	NEPA	No direct mention of PP (or similar terms); stands for the proposition that NEPA has substantive and procedural components, and that the former requires the consideration of environmental effects and establishes national policies that are consistent with the PP.	Strong
Reserve Mining Co. v. EPA 514 F.2d 492 (8th Cir. 1975)	CWA	"Precautionary or preventive steps [or measures or sense]" mentioned three times; asbestos and the equivocal evidence of potential harm of ingesting (as opposed to inhaling); court concludes that Congress used the term "endangering" in a precautionary or preventive sense (so includes evidence of potential AND actual harm).	Moderate
Ethyl Corp. v. EPA 541 F.2d 1 (D.C. Cir. 1976)	CAA	"Precautionary" (plus words following it, like "statute," "in nature," and "legislation") mentioned twenty-eight times in majority opinion; low-lead regulations; the "will endanger" standard was precautionary in nature and did not require proof of actual harm before regulation was appropriate; this is risk-based or anticipatory regulation.	Strong
EDF v. EPA 598 F.2d 62 (D.C. Cir. 1978)	CWA	No direct mention of PP (or similar terms); PCBs; court's holding allows EPA to provide *ample* "margin of safety" in dealing with toxic pollutants that pose a threat to human health.	Strong

TVA v. Hill 437 U.S. 153 (1978)	NEPA	No direct mention of PP (or similar terms), but uses "institutionalized caution; "Snail Darter vs. Tellico Dam"; court's ruling represents an absolutely precautionary approach; did not consider the value of the species nor the economic costs of preservation (i.e. not finishing the dam).	Strong
Lead Industries Association v. EPA 647 F.2d 1130 (D.C. Cir. 1979)	CAA	"Precautionary" (plus words following it, like "nature," "approach," and "orientation") mentioned seven times; "precautionary and preventive orientation" mentioned once; court's holding suggests that the "adequate margin of safety" language in CAA permits EPA to make conservative assumptions and use high-end values in its analysis of health effects of lead.	Strong
Industrial Union Department, AFL-CIO v. American Petroleum Institute 448 U.S. 607 (1979)	OSHAct	No direct mention of PP (or similar terms); court required the Secretary of Labor, before issuing any standard, to determine that it was reasonably necessary and appropriate to remedy a significant risk of material health impairment; the burden of proving the existence and magnitude of harm is on the agency.	Moderate
U.S. v. Vertac Chem. Corp. 489 F.Supp. 870 (E.D. Ark. 1980)	Discharge of hazardous wastes and pollutants that needed taking of remedial measures	The phrase "precautionary and preventive measure to protect the public health" used once; court cited *Reserve Mining* to conclude that the risk of public exposure of dioxin must be removed as much as humanly possible.	Moderate

Gulf South Insulation Co. v. Consumer Product Safety Commission 701 F.2d 1137 (5th Cir. 1983)	Consumer Product Safety Act (CPSA)	No direct mention of PP (or similar terms); court found that the Consumer Product Safety Commission's final rule banning urea-formaldehyde foam insulation in residences and schools (after it found an unreasonable risk of injury) not to be supported by substantial evidence, and that it was not "good science."	Weak
Duke City Lumber Co. v. New Mexico Envtl. Improvement Bd. 102 N.M. 8 (N.M. Ct. App. 1984)	CAA	The phrase "precautionary and preventive orientation" was used once; court cited *Lead Industries* positively and concluded that nature of both the Act and the agency's responsibilities are precautionary and preventive.	Strong
Ayers v. Jackson 106 N.J. 557 (1987)	Contamination of well water by pollutants from landfill	The phrase "preventive and precautionary measure" was used once; court cited *Reserve Mining* positively and concluded that "public health interest may justify judicial intervention even when the risk of disease is problematic."	Moderate
NRDC v. EPA 824 F.2d 1146 (D.C. Cir. 1987) (en banc)	CAA	No direct mention of PP (or similar terms); "Vinyl Chloride" case; court's holding suggests that "absolutism" is necessary; that the acceptable level of safety was to be determined without regard to cost or technological feasibility or to anything other than human and environmental health and safety; idea is to *manage*, and not prevent, harm.	Strong

National Coalition Against the Misuse of Pesticides v. EPA 867 F.2d 636 (D.C. Cir. 1989)	FIFRA	No direct mention of PP (or similar terms); the court ruled that the "fundamental scientific question concerning the environmental effects of chlordane's termiticide uses was sufficiently unsettled to justify the Administrator's putative determination to seek on an ordinary cancellation."	Moderate
Robertson v. Methow Valley Citizens Council; Marsh v. Oregon Natural Resources Council 490 U.S. 332 (1989); 490 U.S. 360 (1989)	NEPA	No direct mention of PP (or similar terms); NEPA did not require a fully developed plan detailing what steps would be taken to mitigate adverse environmental impacts and did not require a "worst case analysis"; EPA has no substantive obligation to take action to mitigate harms identified in EIS; agency has the opportunity to avoid environmental harms (not mandatory).	Weak
**American Trucking Association v. EPA* 175 F.3d 1027 (D.C. Cir. 1999) (later overruled by the next case)	CAA	No direct mention of PP (or similar terms); the court orders EPA to provide an "intelligible principle" explaining how it selected health-based air quality standards for ozone and particulate matters; it further rules that EPA must consider identifiable effects and then assess the ozone's net adverse health effect by whatever criteria it adopts.	Weak
**Whitman v. American Trucking Associations* 531 U.S. 457 (2001)	CAA	Unanimous decision in which the court rules that the CAA "unambiguously bars cost considerations" from the process of setting air-quality standards.	Moderate

New Mexico v. GE 335 F.Supp.2d 1185 (D.N.M. 2004)	Chemical contamination of ground-water	The phrase "precautionary principle" was mentioned five times; court ruled that whether to abandon or remediate a site is a policy "choice"; the principle, therefore, counsels as strongly in favor or effective remediation as it does abandonment.	Moderate

From our review of the above set of cases invoking the precautionary principle, several findings are particularly interesting. First, there are only seventeen cases between 1970 and 2007 that either directly or indirectly cited the principle. The courts were most active in applying it in the 1970s and less so in the 1980s and beyond. In addition, the courts were more willing to apply the strong version in the 1970s than in the 1980s. The 1990s signaled possibly the death knell for judicial application of the principle; only three decisions between 1999 and 2007 cited it. Moreover, none of the decisions applied the strong version.

Thus, our analysis suggests that precaution, both as a guideline and an ideal for environmental decision-making, has lost momentum over the past two decades. As Professor Sheila Jasanoff aptly points out, a decrease in judicial responsiveness has led to decline in the precautionary ideal in U.S. law: "...the Supreme Court's decision not to meddle in agency decision making in the 1980s put an end to the trickle-down effect of precaution throughout the decision-making process."[47] One of the explanations for this trend is the inherent contradiction between precaution and the need for certainty, which permeates the U.S. system of law.[48] Increasingly, environmental decisions have relied on economic cost-benefit and risk analyses, which presuppose full knowledge of the facts. This runs against the notion of environmental choices that err on the side of caution when confronted with scientific uncertainties. In short, environmental policy-makers (in the legislative, administrative and judicial branches), as well as private actors (businesses and industries), have struggled with the dilemma: "how to rely on risk assessments and simultaneously adhere to the precautionary approach."[49]

The D.C. Circuit Court of Appeals is perhaps the best example of the above-discussed pattern of declining judicial use of the precautionary principle. Out of the seventeen cases, seven were from the D.C. Circuit. This is not surprising, as many cases involving EPA begin in the U.S. District Court for D.C. (and appeals are consequently taken up to the Court of Appeals). Of these seven cases, four were from the 1970s, and all of them advocated for the strong version of the principle. In contrast, in the following decade, the court applied the strong and moderate approaches once each. Since 1989, the same court applied a weak version of the precautionary principle only once.

We also examine how the courts have applied the principle in different issue areas and the manner (i.e. direct vs. indirect) in which they did so (Table 3). First, we find that the courts applied it more frequently in cases in which major environmental statutes, such as NEPA and CAA, were involved; out of the seventeen cases, only four did not. Second, when the CAA was at the heart of the case, the courts were more likely to promote precautionary-based measures. Consistent with the discussion above, they advocated for the strong version particularly in the 1970s; out of the six CAA-related cases, four were decided during that period. Last, the courts seemed to favor an indirect approach to applying the precautionary principle to environmental decision-making. More specifically, none of the cases actually explicitly mentioned the term "precautionary principle" and only six out of the seventeen cases directly referenced terms related to the principle (see Table 3).

Table 3: Analysis of the Application of Precautionary Principle (PP) in U.S. Case Law (1970-2007)

Versions of the PP by method of application	Time period		
Direct	*1970-1979*	*1980-1989*	*1990-2007*
Strong	CAA (2)	CAA (1)	n/a
Moderate	CWA (1)	no statute (2)	n/a
Weak	n/a	n/a	n/a
Indirect			
Strong	NEPA (2); CWA (1)	CAA (1)	n/a
Moderate	OSHAct (1)	FIFRA (1)	CAA (1); no statute (1)
Weak	n/a	NEPA (1); CPSA (1)	CAA (1)

Note: The numbers in parentheses represent the number of cases.

Discussion

This section explores the impacts of the use of the precautionary principle in U.S. case law on judicial, administrative, and legislative environmental decision-making. In addition, we examine the implications the principle may have on the standards of liability, the burden of proof, and the overall environmental quality.

Courts shape environmental policy-making in a number of important ways, as discussed by environmental lawyer and Professor of Public Administration at Syracuse University, Rosemary O'Leary.[50] First, courts extend the meaning of the precautionary principle by interpreting environmental laws. Judicial interpretations determine

not only the scope of application of precautionary measures, but also set precedents that guide administrative, legislative, and judicial policy-makers in making decisions under scientific uncertainty. Our analysis, for instance, reveals that courts have been reluctant to apply aspects of the principle directly, especially in recent years. This, coupled with the Supreme Court's decision not to interfere with agency decision-making, may signal unwillingness on the part of the judiciary to incorporate the principle in setting precedents.

Second, courts influence environmental policy through their choice of standard of review.[51] This is critical for understanding the relative weight of each of the four elements of the precautionary principle (trigger, timing, response and strategies). By their standard of review, courts reveal which aspect of the precautionary approach is more ambivalent, elusive or subject to political compromises.

Third, courts act as 'gate-keepers' when determining the legal standing of the participants and the actual controversy in the case.[52] This is an important source of agenda-setting power that courts exercise in environmental policy-making. The number and scope of cases that make explicit use of the precautionary approach is, thus, an indication of the attention and importance of the principle in U.S. law. Our findings suggest that because courts rarely call for applications of precautionary measures overtly, they perhaps do not view the precautionary principle as an imperative component in environmental law and policy.

Greater reliance on precaution may have important implications for: (1) the standards of liability, (2) the burden of proof, and (3) the state of the environment. It can be argued that closer adherence to the precautionary ideal will overturn the scales of liability in favor of strict liability. Lack of certainty about the effects and magnitude of environmental hazards requires as complete and high assurance levels as possible. This suggests that environmental policy-makers are likely to impose more stringent standards of liability.

A switch in the burden of proof from environmental regulators to the regulated entities is characteristic for the strong version of the precautionary principle (e.g. BAT PP and Prohibitive PP).[53] We suggest that the trend of shifting the burden of proof may have spill-over effects (i.e. moving from strong to weak versions of the precautionary principle). At present, FIFRA is the only piece of environmental law that employs a licensing system. This kind of regulatory scheme, in contrast to others such as NEPA and CAA, requires the registrants to demonstrate the safety of their products or activities in advance. By having this requirement, FIFRA relocates the burden of proof to the proponents of an activity or substance and creates important policy implications and incentives.[54] It generates incentives for innovation and knowledge creation, which in turn can improve the process of environmental decision-making under uncertainty, and stimulate more

environmentally-sound practices.

Finally, it is important to acknowledge that the precautionary guideline may not always reflect the goal of environmental quality (not, at least, in its current status in U.S. environmental law). According to leading experts in this area: "The precautionary principle is a culturally framed concept that takes its cue from changing social perceptions about the appropriate roles of science, economics, ethics, politics and the law in pro-active environmental protection and management."[55] Critics suggest that as an operational standard for decision-making, the precautionary principle can produce "unduly rigid and costly regulation," and at times lead to regulatory gridlocks.[56] In addition, it is important to acknowledge that the application of the precautionary approach is a function of the political process of decision-making. It is a product of political compromises, not of sound scientific knowledge.[57] Last, but not least, there can be substantial financial burdens associated with "overprotection" or extreme caution in the face of uncertainty.[58]

All of the above suggest that environmental concerns may not (necessarily) take center stage in environmental decision-making under conditions of scientific uncertainty. At a minimum, the precautionary principle is to be seen as a preference, "a habit of thought," and an ideal that can be adhered to by decision-makers, the courts, citizens and industries. "Only then," in the words of Professor Jasanoff, "will we be able to develop innovative ideas,...for how to operationalize the concept within the constraints of a living, but changing, regulatory process."[59]

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6 One explanation is the lack of regulations in the United States that make direct or explicit use of the precautionary principle. As noted above, precaution is an underlying notion of US environmental law, but has not enjoyed the same attention and support by legislative policy-makers in the US, as in Europe.

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Local Food Systems in an Ecoagriculture Landscape
Developing Indicators of Performance

Courtney Wallace

ABSTRACT
The segregated approaches traditionally employed to address issues of livelihood, food insecurity, and loss of wild biodiversity not only are inadequate to solve these issues, but have led to widespread social, environmental—and now, major economic problems as well. In this paper, I explore local food systems and ecoagriculture, and the linkages between them, with an aim to bring additional understanding to the challenges of developing integrated approaches to securing food supplies in an ecologically sound and socially just way. By highlighting the search for performance indicators currently being conducted by the Finger Lakes Ecoagriculture Working Group, I illustrate the synergies of the two frameworks. Such insight will inform policy and drive further research as well as emphasize the importance of implementing integrated approaches to solve complex issues.

Michael Pollan, the UC Berkeley journalist, warned the president-elect in the October 2008 *New York Times Magazine*, that food, by and large ignored since the Nixon administration, was about to demand his attention. The health of a nation's food system, he writes, is a "critical issue of national security." [1]

While Pollan speaks of the United States specifically, global cases abound that illustrate the interconnectedness between sustainable (unsustainable) food systems and thriving (degraded) agricultural, social, and environmental systems. Furthermore, human population growth, massive loss of wild biodiversity, and climate change are also inextricably linked to global food security. To overcome a situation this dynamic, complex, and interdisciplinary requires considerable cooperation, innovation, and integration.

In response to this challenge in the U.S. is an emerging fascination with local food systems. Underlying the concept is expanding recognition that direct connections between producers and consumers bring livelihood benefits to both. Furthermore, once these linkages are established, it becomes possible to generate landscape scale benefits across several dimensions.

In 2001, the Millennium Ecosystem Assessment brought together experts from a host of disciplines around the world to analyze the effect of ecosystem change on human well being. During the multi-year proceedings, Jeffrey A. McNeely, chief conservation scientist for the

World Conservation Union (IUCN) and Sara J. Scherr, an agricultural economist with expertise in small-holder farming systems, together realized the zero-sum nature of simultaneous but separate conservation and agriculture objectives. By looking at maps that identified the extent of agriculture area and projected requirements as well as those that were designated as biodiversity hotspots, it became clear from the considerable overlap that there simply does not exist enough distinguishable area to achieve both agricultural and conservation goals discretely. Thus, McNeely and Scherr recognized the need to develop integrated strategies that concurrently achieve both goals, as well as benefit human well being, and ecoagriculture was born.

Ecoagriculture, then, refers to land-use systems managed for both agricultural production and wild biodiversity conservation.[2] Repudiating the classic trade off model whereby the increased protection of biodiversity conservation sacrifices agricultural production, and vice versa, ecoagricultural strategies aim to capture the synergies of both so that, in the end, both benefit. That is, the challenge of ecoagriculture is to protect wild species and conserve habitat while increasing agricultural production and benefiting human livelihoods.[3] More recent literature has further suggested ways that ecoagriculture landscapes can deliver a wide range of ecosystem services and help sustain the conditions for 'climate-friendly' farming.[4]

This paper examines local food systems and ecoagriculture, and the linkages between them, with an aim to bring additional understanding to the challenges of developing integrated approaches to securing food supplies in an ecologically sound and socially just way. By highlighting the search for performance indicators currently being conducted by the Finger Lakes EcoAgriculture Working Group, discussed in more detail below, I illustrate the synergies of the two frameworks. Ultimately, the insight generated by this analysis will drive the policies that are implemented to secure food supplies, enhance livelihoods, and conserve and restore the ecosystem services upon which sustainable production depends. Due to the inherently regional nature of a local food system, it is important that the indicators be molded to the region, and so while I examine the Finger Lakes in this paper, this methodology may be borrowed and adapted for other regions attempting a similar analysis.

Measuring Local Food Systems

Local food systems are based on the idea that unique connections between producers and consumers bring livelihood benefits to both, and further, that once these linkages are established, it becomes possible to generate landscape scale benefits across several dimensions. First, measurement is a way to track performance so that stakeholders and investors in the system know whether or not it is moving in desirable

directions. Second, it can engage stakeholders in a social learning process that increases their familiarity with the system and its potential, and generates insight into how to manage it effectively. This adaptive management is a key component of the sustainability of the system, and one of the key challenges is thus choosing indicators of performance that are highly meaningful.

The search for performance indicators, too, deepens our thinking of what is the ideal outcome of working under these frameworks, and how these systems are evolving and co-evolving. For example, if we were to eventually measure an increase in robustness of a local food system, we would examine whether the landscape is likewise moving toward the ecoagricultural ideal. We would then identify drivers of growth common to both, and it is synergies such as these that we will focus on as researchers and policymakers.

After drawing from popular and scholarly sources to lend additional insight into what composes a local food system, I highlight the innovations that are currently being explored by the Cornell Ecoagriculture Working Group in the local Finger Lakes region of New York State. In partnership with EcoAgriculture Partners, based in Washington, D.C., this group was charged to explore whether a food system in the Finger Lakes is moving toward an ecoagriculture landscape. By describing our multidisciplinary search for indicators, I illustrate the synergistic relationships between the two frameworks emerging in this region. I suggest how certain integrative indicators may be developed and tracked to provide concrete evidence, cost-effectively, for how a local food system and an ecoagriculture landscape are co-performing. I conclude with suggestions as to how institutional support for local food systems may help to realize the potential of ecoagriculture landscapes in the region.

Food Production in the United States

Over the last several decades, the expanding influence of agribusiness in the United States—that is, the increased globalization and industrialization of food systems—has led not only to a reduction in the diversity of crops grown, and thus available to consumers, but also to a greater distance between consumer and producer. The recent scandal surrounding the Peanut Corporation of America is, for some, just another case in a frightening food-safety trend that follows the E. coli outbreak in spinach in 2006 and tomatoes in 2008. For others, however, the peanut case is indicative of a larger set of problems resulting from this increased temporal and geographical producer-consumer distance. Induced by the rise of agribusiness, these issues run the gamut from soil and air pollution, to the bankruptcy of family farms, to loss of critical wildlife habitat.[5]

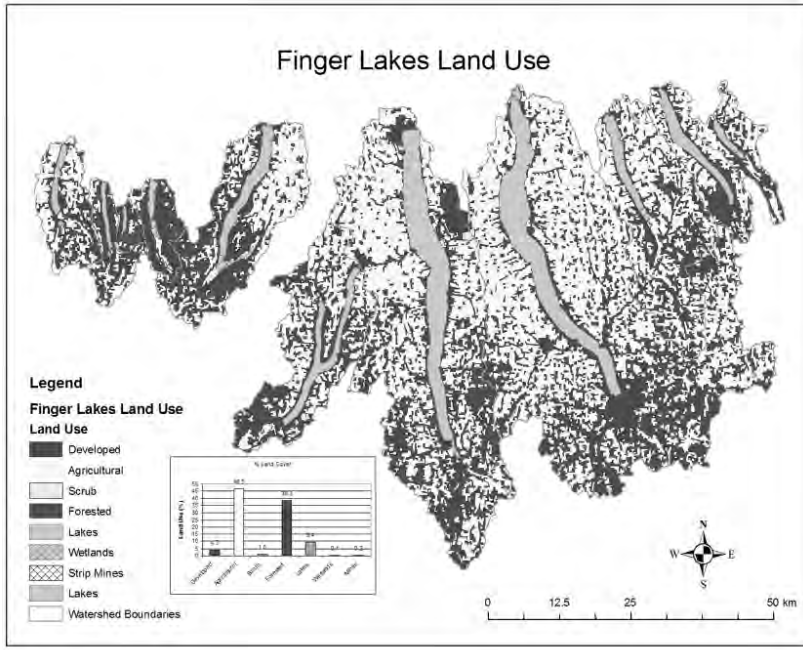
Local Food Systems

In an effort to counter the negative effects of agribusiness, the local food movement has emerged to reconnect producers and consumers of food, to restore economic vitality to small farms, and to encourage more environmentally sound and socially responsible methods of agricultural production. Indeed, in a seminal article about alternative agriculture in the northeast of the United States, Pfeffer and Lapping argue the merits of returning to greater local and regional self-sufficiency in food production.[6] A local food system satisfies the ecoagricultural triumvirate; local food systems are economically, socially, and environmentally sustainable for a defined region, with food relationships between consumer and producer that reside opposite the spectrum from those found in agribusiness. Connecting these three "legs of the stool" are supportive institutions.[7]

The benefits of a local food system to producers, consumers, the community, and the environment are far-reaching and diverse. Higher incomes, identified by the Farm and Food Policy Project as one of the most important benefits of a local food system, not only increase opportunities for existing farmers to stay in business, but encourage new farmers to enter the market.[8] Local food systems could allow this balance to shift back to the farmer.[9] Local food systems minimize the time between food harvesting and food consumption, and thus maximize the nutrition retention of produce. Therefore, the American Farmland Trust, which has become increasingly active in working to build local food systems and preserve farmland on the urban fringe, declares access to fresher, more nutritious food to be an important benefit to consumers.[10]

Local food systems also create partnerships between producers and consumers that create better accountability on the part of producers.[11] Stronger and more direct producer-consumer relationships result in greater producer transparency as well as increased consumer feedback. In Anderson's words, a local food system creates trust through accountability.[12] Local food systems tend also to be more environmentally-friendly, utilizing sustainable farming practices such as crop diversification and low soil tillage. Finally, and increasingly importantly, local food systems lead to a reduction in food-miles, which reduces the carbon footprint of these smaller scale farms and, due to their diversity, leads to more resilient farm systems that can resist crises like the recent nation-wide tomato and spinach E. coli scares.[13]

Figure 1: The Finger Lakes Region of Upstate New York



A map of land use in the Finger Lakes Region illustrates the significant amount of land remaining forested or in agricultural production.

The Finger Lakes region of western-central New York State is composed of eleven linear lakes running on a north-south axis. The longest is Cayuga, just over thirty-eight miles long, and one of the deepest lakes in America at 435 feet. Directly to the West is Seneca, slightly shorter in length but 618 feet at its greatest depth. Neither of these two large lakes are wider than 3.5 miles at any point, and nor are the smaller lakes, thus the name of the region.

Agriculture is New York State's top industry, and milk the leading agricultural product. The Finger Lakes mirrors these characteristics, producing corn, hay, wheat, oats, barley, and soybean, as well as many dairy farms. Apples, cabbages, sweet corn, and potatoes are also grown, and maple syrup and honey collected. The region has garnered global attention in recent years for its wines, most notably its Rieslings, comparable to those of Germany. There are currently about 100 vineyards centered on Seneca, Cayuga, Keuka, and Canandaigua Lakes, which has significantly bolstered the tourism industry in the area. The Finger Lakes National Forest is the only national forest in New York State, and encompasses over 16,000 acres between Seneca and Cayuga Lakes. Over thirty miles of trails connect pastures, forest

and the famous shale gorges.[14]

A Local Food System in the Finger Lakes?

Around the country, researchers have been working both to characterize and quantify local food systems. Here in Ithaca, New York, strong anecdotal evidence prompted an investigation to empiricize the existence of a Finger Lakes local food system, with Ithaca at its epicenter.[15] Adopting a landscape measures approach and using a slightly different nomenclature that nonetheless embodies the principles of ecoagriculture, we have identified four broad categories of performance indicators—agricultural production, environmental conservation, livelihood security and economic vitality, and institutional capacity.

Indicators of a Local Food System in the Finger Lakes

Indicator analysis identifies measurable phenomena to establish a baseline and subsequently quantify changes so as to measure progress (or decline).[16] The Landscape Measures Resource Center defines an indicator as

> An object or phenomenon that can be counted or measured, which enables claims to be made that change is occurring regarding progress toward a goal. In the LM framework, indicators are measured to reveal how well criteria (sub-goals) for landscape performance are being met. It is equally viable to create indicators of the broader goal, directly.[17]

Indicators must also be easy to measure, easy to understand, relevant, and reliable, and are best when intuitive to laypersons and decision-makers and, crucially, when system changes occur, the indicator changes in a predictable way.[18] Indicators are used, in our case, then, to describe the current existence of a local food system in the Finger Lakes, and then to qualify trends. Secondly, indicator analysis can help inform activities and policies to build or strengthen a local food system in the region.

In this section I introduce several indicators of local food systems and briefly describe how data thus gathered can be used to quantify a local food system in the Finger Lakes. While I do not quantify these indicators, I establish the rationale for why these indicators would be meaningful to measure. Four categories—that represent the key dimensions of an ecoagriculture system—are used to organize the measurable indicators. First is a set of indicators of agricultural

production, which includes means of production, farm size, and a measure of carbon and water dependency on the farm. Second, indicators of environmental conservation include food miles, emissions, and the level of biodiversity conservation. Third, indicators of economic vitality and livelihood security include terms of employment, profit generation and local retention of profit, and the resiliency of the system. Finally, indicators of institutional support include norms, values, and the institutional environment or infrastructure. Following the discussion of these heterogeneous indicators, I describe three integrative indicators.

Indicators of Agricultural Production

The sustainability of local farms is a key component of a local food system. A direct agricultural production indicator of a local food system is the presence of a local market for food produced on these farms.[19] In a local food system, food grown on the farm is sold directly to the local community. Local farms that export most of their produce outside of the region because the local community does not demand enough of their particular crop do not adhere to this indicator. For example, an apple farm in the Finger Lakes region that sells twenty percent of their apples locally but exports eighty percent out of the region would be a weak contributor to a local food system. Quantities of food production in terms of imports and exports can help reveal whether or not there is a local market for food grown in the Finger Lakes.[20] Additionally, a self-sufficiency index, such as the one developed by Cowell and Parkinson, shows the ratio of production to consumption, portraying in numbers the local retention of goods versus local reliance on imports, including those that cannot be grown in the region, such as spices.[21]

Indirect measures of the agricultural production component of a local food system may include: crop diversity, farm size, and sustainable production practices. Crop diversity indicates a local food system in which local people are able to meet diverse dietary demands from food produced in the region. Again, self-sufficiency indexes can be used to measure whether or not a region has a diversity of crops for consumption.[22]

Farm size is an easily measurable indicator, and highly revealing. A high numbers of smaller farms (in general, those with sales less than $20,000 annually) suggest greater diversity in crop production.[23] Also, small farms typically sell locally because they do not produce enough to warrant significant export of their produce.[24] Small farms provide returns to the local economy by buying consumer and capital goods, utilizing service and financial industries, and paying taxes.[25] In addition, small farms help preserve rural landscapes by buffering from development, and local food systems work in part to maintain the regional environment.[26]

The list of sustainable production practices continues to evolve,

and currently includes crop rotation, rotational grazing, low soil tillage, planting cover crops, organic farming, and reduced water demands. Many of these methods are discussed in the final section of the paper as they not only encourage viable agricultural production but also may mitigate climate change. High frequency and efficient employment of these methods indicates a local food system.

Indicators of Environmental Conservation

A thriving local food system is characterized by healthy ecology, which is brought about by protecting and conserving environmental assets including soil, natural vegetation, water, and air. Measurable indicators of a healthy agroecosystem then include food miles, carbon and water footprints, water and soil health, and animal waste processing practices.

The concept of food miles is now mainstream, and the fact that food currently travels an average of 1,300 miles before reaching consumers' plates has given rise to component movements such as the 100-Mile Diet and bestsellers like Barbara Kingsolver's *Animal, Vegetable, Miracle* in which the author and her family vow to eat as much as possible from neighboring farms and their own backyard.[27] Part of the motivation to eat as such is to reconnect with the food and retain maximum nutrition, but also as highly important is the reduction of fossil fuels and other inputs that increase with each node and each mile on the journey from producer to consumer. While 100 miles is a popular radius to indicate 'local,' our study chose a thirty mile radius with Ithaca as the epicenter. The abundance of agricultural land, as well as a bustling farmers' market and robust institutional support make this distance viable, but it should be noted that this is necessarily not possible in other regions. The amount of food produced and retained in this thirty mile radius, then, would help quantify a local food system in the Finger Lakes. Data from local groceries and supermarkets (for example, local vs. non-local apples carried and sold) could help characterize the situation.

The carbon footprint—that is, the measure of the impact of activities on the environment and climate change—is something that ideally would serve as an indicator.[28] However, it is highly complex to measure on a landscape scale, and researchers around the world are currently challenged to measure carbon footprint on a multi-farm scale. So while the methodology is not yet established, the importance of the carbon footprint as a meaningful indicator is recognized in the meantime. What might be expected on farms, for example, are lower tillage practices that translates to reduced demand of fuel for machines, less soil carbon emissions, and less input of nitrogen fertilizers. For illustrative purpose, some evidence in the Finger Lakes of efforts to reduce the carbon footprints of farms can be found in the Solar Powered Livestock Watering Project spearheaded by the Finger Lakes Resource

Conservation and Development Council.[29]

Indicators of soil health that are indicative of healthy soil function and are feasible to measure include soil organic matter content and active carbon.[30] Particular organic matter content in soil composition is indicative of the soil quality and health, and water quality can likewise be measured by the presence of heavy metals and organic chemicals residues in surface and groundwater.[31]

The disposal of animal waste poses serious pollution threats to water quality, soil integrity, air purity, and the rural-urban interface (noxious smells, for example).[32] Smaller farms, by nature, have a smaller density of animals, thus animal waste is not as concentrated and can be processed more easily. The practice of fencing off pasture from waterways to prevent direct contamination of water from fecal matter, for example, indicates environmental conservation in a local food system.

Indicators of Economic Vitality and Livelihood Security

A local food system, like any other venture, must be economically viable in order to persist. Similarly, livelihood security must increase for the additional sake of social and ethical viability. Terms of employment, financial analysis and the local retention of money, and the more abstract, but still quantifiable, notion of system resiliency are used to classify the socio-economics of a Finger Lakes local food system.

Underpaid, overworked, exploited, and otherwise dissatisfied employees breed unrest and inefficiency, as well as being unethical and disharmonious with the tenets of ecoagriculture. Therefore, the first measurable indicator of livelihood security examines fair terms of employment. Agriculture is one of the most hazardous industries in the nation, and farming accidents (since, unlike in private industry, families often share the work and live on the farm) pose a dramatic risk to the welfare of an entire family unit. In a local food system, OSHA and other legal regulations must be adhered to at the very least, and furthermore the rates of farm-related injuries should be far less than the national average. For example, reduced pesticide use should reduce the incidence of pesticide-related respiratory illnesses. Similarly, humane meat production and strong institutional support (which weakens the shock of a poor growing season) should lead to a lower incidence of psychological stress. The subjective feelings and situations of those involved with the local food system must be taken into account. For example, what are the feelings about safety and justice, security of the job and the industry, sources and level of stress, perception of institutional support, and levels of income? A local food system would be indicated by producers who are able to invest profit and grow their businesses rather than paycheck to paycheck.

Perhaps the most obvious indicator of economic vitality is the

amount of money generated by the individuals, individual enterprises, and institutions relating to the local food system and the amount of that money that is retained locally. Ithaca's thriving Farmers' Market is one of the strongest indicators of a profitable, self-sustaining local food system.[33] An analysis of the vendors at the Farmer's Market would paint a telling portrait of the type of supplier and customer. By definition, all vendors are local (that is, producing within thirty miles of Ithaca).[34] However, it would be worthwhile to determine what percentage of these producers depend wholly, partially, or not at all (in other words, they retail at the Farmer's Market with profit not being the main motive, i.e., for a hobby) on a farmer's market for their income. A large percentage of farmers who depend largely on Farmer's Market sales would, for example, indicate that the existence of the Farmer's Market is an important component of livelihood security.

The retention of money is a crucial indicator, but can be tricky to measure. While buying local means on the one hand that money is not being distributed to scattered stockholders and/or outposted managers, and ensures that local taxes are paid (some chains do not pay local taxes, for instance), it does not necessarily mean local businesses and/or employees are spending their money locally. However, it is generally accepted that buying local increases the probability that the money will stay local, that business profit will be invested and that benefits will be felt directly or indirectly in the community; a report by Sustainable Seattle (an organization attempting to characterize the food system in Puget Sound) emphasizes the importance of community linkages in keeping money local.[35] Perhaps, then, a viable proxy to determine whether money stays in the region is to examine the social and institutional linkages, whereby strong, numerous, and diverse linkages indicate a greater proportion of money staying local.

Third, more abstract, and related to the previous two points is the idea of system resiliency. In order to be sustainable, a system must be able to absorb shocks. Examples of unsustainable food systems that were unable to absorb shocks were the potato famine in Ireland, for which a homogenous crop and lack of institutional support were largely to blame, and the more recent E. coli outbreak in the country's spinach, for which over-connectedness and lack of transparency were at fault. Seemingly the best shield is a balanced and diversified portfolio of products, together with diverse and balanced social and institutional linkages. Sustainability of labor forces must also be considered. In New York State, the majority of agricultural land is lost due to abandonment, as new farmers are not available to replace those that retire.[36] A viable market would be indicated by the number of new farmers entering the field, and resiliency measured by new farmer training and support services, for example as provided by the Cornell Cooperative Extension

or the recently formed Center for Local Food and Farming.[37] This idea segues into indicators of institutional support.

Indicators of Institutional Support

If agricultural production, biodiversity conservation, and livelihood security are the three legs of the ecoagriculture stool, then the rungs connecting the legs and supporting the overall structure are institutions. An institution is "the governance structures, markets, social capital, cultural norms and human capacities that enable an integrated, multifunctional (ecoagricultural) landscape to be realized."[38] In other words, institutional support comes not only from policies and organizations, but also from an encouraging community mindset.[39] Furthermore, the most effective institutional support systems are a mixture of public, private, civic, and hybrid organizations—the diversity is strengthening.[40] Public support includes public policies, public agencies, and not-for-profit markets. One representation of private support is monetary donations from businesses. Civic support refers to the social capacity to support the local food system – the mindset, the way of life, and the desire to see it succeed; and hybrid organizations include universities and other groups that utilize public and private influence. [41] Indicators of strong institutional support in a local food system include the diversity of the marketplace and the proximity of market transactions, the diversity and effectiveness of supportive organizations, and the successful application of policy tools such as conservation easements.

The market for local food includes farmers' markets, community-supported agriculture (CSAs), and local grocery stores. In a local food system, these entities assume characteristics of both private and civic institutions, and therefore they may be referred to as hybrid institutions combining characteristics of different institutional types.[42] A high level of direct sales—that is, farmers selling their products directly to the consumers—is a highly important indicator of a local food system. Direct selling is an effective way for farmers to realize immediate profit, and for consumers to avoid paying the costs associated with middlemen, but the benefits are even more far-reaching. [43] Direct selling, additionally, is a powerful way to build relationships, allowing consumers to learn about the person who grew their produce, and the producers to receive feedback. Farmers' markets and stands, for example, are a common means of direct selling. Again, the Ithaca Farmers' Market provides strong evidence of many aspects of a local food system.

A diverse set of local supportive organizations indicates a local food system. Several of the institutions that contribute to a local food system in the Finger Lakes have been mentioned in other sections of this paper, and include Cornell University and its extension services and other activities that support its land-grant mission, the Cornell Small Farms

Club, the New World Agriculture and Ecology Group, Dilmun Hill Student Farm, the Community and Rural Development Institute, the Community Food and Agriculture Program, and the newly formed NGO called the Center for Local Food and Farming. The missions, activities, and budgets of these and other local organizations describe the institutional support system in the Finger Lakes. Measurement tools include the Institutional Performance Scorecard, which is used to identify key organizations and assess the overall potential of the institutional environment in an area to foster a robust local food system.[44] The institutional scorecard framework outlines three criteria: the existence of a mix of public, private and civic organizations; adequate financial and human capacity; and ability and willingness to coordinate activities and policies.[45]

Development pressures also decrease opportunities for young people to enter farming, because they cannot compete with developers for valuable land. A local food system must employ the powerful tool of conservation easements (whereby it is made illegal to develop the land) and other economic incentives, such as preferential farmland tax assessment, to mitigate barriers to development.[46] Additionally, New York State's Farmland Protection Program has preserved 13,300 acres of active farmland in the state in the program's eleven years. The most recent round of funds went to nearly ten farms in six different counties in the Finger Lakes, representing $7,360,672.[47]

While many of the new, young farmers in the Finger Lakes are well aware of the host of benefits of small-scale, regionally-focused farming, others, as indicated by Pfeffer and Lapping may believe that farms cannot be competitive without being large enough to realize scale efficiencies. Education and extension services (for example, through the Cornell Cooperative Extension or the proposed farmer training activities of CLFF) are thus necessary.[48] Additionally, the role of nonagricultural activities should be supported on farms, for example by schools with student field trips and internship opportunities, and "estate management" in the form of animal boarding and training.[49] This outreach is a key component of the institutional support of a Finger Lakes local food system.

Integrative Indicators

In this section I suggest three integrative indicators that can provide further insight into the performance of a local food system and an ecoagriculture landscape. The indicators in this category, as the name suggests, bring together several heterogeneous indicators into single value indicators.[50] The holistic nature of these indicators reflects the whole landscape approach of ecoagriculture, and renders a particularly well-suited and cost-effective analysis. First, I briefly present two

biophysical indicators and then discuss a third one that encompasses information on practitioners.

The biophysical condition of small waterways, such as streams, can be used to infer the condition of the entire water basin. The state of the water system reflects nearby farming practices.[51] For example, the composition of water nutrients suggests information about soil erosion. Major research, such as the Cayuga Lake Water Report Card, can be used to track changes in agricultural practices that suggest a local food system.

Similarly, soil organic matter can be used to indicate the health of the agricultural landscape. For example, conventional cultivation techniques and the use of high-till practices cause a greater reduction in soil organic matter compared with reduced or no-till systems.[52] Analogous to systematic reporting of water health, research on soil health is a rich resource to track changes of interest.

Both the biophysical condition of waterways and soil organic matter are cost-effective indicators that are useful to several different disciplines as well as capable of providing concrete evidence as to how a local foods system and an ecoagricultural landscape are co-performing.

Thirdly, and perhaps most importantly, the number of farms and farmers that are deliberately participating in local marketing, together with strategic information about their production practices, integrates a wealth of information about the socioeconomic and ecological conditions that make participating in a local food system possible. This indicator also sheds light on the institutional environment for cooperative efforts in the production and marketing of agricultural outputs (the farm), and for planning and management of public resources (the ecosystem). The richness of this indicator warrants further explanation:

Deliberate Knowledge

The first part of this indicator requires that the farmers themselves must participate in direct marketing—farmers' markets, roadside stands, and CSAs—which is the primary market in a local food system.[53] In other words, these farmers are fully aware that they are a part of the local food system or the ecoagricultural landscape—they are knowing and deliberate participants. When the farmers themselves understand the key role they play, they are indicators. This notion is measured in the number of farms and farmers who consider themselves a part of a local food system and/or ecoagricultural landscape.

Information About Production Practices

Secondly, in addition to keeping track of who these farmers are, it is important to consider what they do. That is, agricultural practices are studied to increase understanding about the movement of the system. Additionally, quantifying these practices—that is, systematically

counting who is practicing what and by how much—is a proxy indicator of a real outcome—that is, a local food system or ecoagricutural landscape.

Institutional Support
By bringing practitioners together in a social learning environment, the institutional support component of the system is strengthened, and the number and location of the practitioners in the system become increasingly more reliable indicators of the performance of the system. This aspect emphasizes the importance of education and communication, showing a system that is driven by deliberate, concerted action. This part of this integrative indicator is an articulation of the objective that practitioners are working together to achieve.

In sum, the practitioners who are deliberately a part of the local food system are a highly meaningful integrative indicator, lending information about the private (farm) components of the system, but also about the larger ecological and socioeconomic elements system on which the farm depends.

Conclusion

The segregated approaches traditionally implemented not only are inadequate to solve issues of livelihood and food insecurity, and biodiversity, as Pollan, McNeely and Scherr, and others have illuminated, but have led to widespread social, environmental, and now, major economic problems as well.

The idea of eating locally has garnered considerable attention recently in both academia and the popular press, and in this paper I aimed to bridge these two realms by drawing from each to describe what comprises a local food system. Additionally, I illustrated how the indicator approach is used to track changes in the system, and highlighted the Finger Lakes Ecoagriculture Working Group's ongoing search for heterogeneous and integrative indicators. Local food systems and ecoagriculture are complementary, integrative, systems-oriented frameworks, and combining the insight generated by each guides the search to find better ways to secure food supplies, enhance livelihoods, and conserve and restore the ecosystem services upon which sustainable production depends.

Further research should focus on proving the capacity for these strategies to generate production, livelihood, and biodiversity benefits, and to additionally uncover new and adaptable strategies. At the same time, institutional support for local food systems is, as the "three legs

of the stool" analogy suggests, what holds everything together. Further policy research, as such, is critical to help realize the full potential of ecoagricultural landscapes in both the Finger Lakes region and elsewhere.

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VIEWS & REVIEWS

Perspectives on and analyses of current public policy discourse

Positive Institutional Change from the Ground Up

A Case Study of a Community-led Collaborative Governance Process

Naji P. Makarem

ABSTRACT

Recent theoretical advancements in the field of new institutional economics highlight the critical importance of the interaction of formal and informal institutions on socio-economic outcomes at multiple scales. The literature however falls short of explaining transition processes and strategies towards higher levels of balanced community/society interaction. This case study contributes to this new theoretical breakthrough by evaluating the transition of Jardim Gramacho, a neighbourhood of 20,000 low-income residents in Rio de Janeiro, from a worse-case scenario of low 'community' and low 'society' to a sub-optimal albeit improved scenario of higher 'community'. Although not generalizable this case study raises the hypothesis that such a transition in institutional arrangements is achievable through a community-led collaborative governance process implementing a strategy of empowerment planning. I draw on theory of network power for understanding the dynamics behind the positive institutional changes evident in this case study, as well as prospects for continued progress towards higher levels of more balanced community/society interaction. I argue that such institutional change at multiple scales is integral to the process of aligning economic development with the needs of people and the environment, thus integral to the process of making our economies more sustainable.

Recent theoretical breakthrough in the field of new institutional economics bridges the intellectual divide between proponents of formal institutions ('society') on one hand, and informal institutions ('community') on the other, as key explanatory variables in socio-economic outcomes. This emerging theory[1] highlights the synergistic nature of community/society interaction at various scales, its expected impact on socioeconomic outcomes and the expected pace of change of institutional arrangements through social forces.

This emerging theory however, despite its seminal contribution to the field of new institutional economics and economic development more generally, paints a static picture of institutional dynamics within a comprehensive spectrum of possible institutional arrangements. In

other words community/society interaction theory has a great deal to say about the expected impact of various degrees of community and society development and interaction on socioeconomic outcomes, as well as the expected pace of change of institutional arrangements depending on the degree of imbalance between the two, but falls short of explaining how communities at various scales can consciously shape institutional arrangements. Since community/society interaction is now understood to be a critical factor in socioeconomic outcomes, understanding how institutional arrangements can be shaped and developed by stakeholders is paramount to the socioeconomic development process.

Furthermore, such a dynamic picture of community/society interaction is critical to the ongoing process of aligning our economies with the needs of people and the environment, a struggle towards sustainable development. Unsustainable development emerges when social and/or environmental costs are externalized from decision-making criteria. By including stakeholders in institutional arrangements, such costs are brought in to the decision-making process. Again, understanding dynamic transition strategies and processes towards higher levels of community/society interaction at various scales is critical to achieving such inclusive and collaborative governance processes that promise to steer our economies in more sustainable trajectories.

In this article I attempt to contribute to this emerging literature by examining a dynamic transition process in institutional arrangements in a neighborhood of 20,000 low-income residents in Rio de Janeiro. As I will argue, the neighborhood achieved a transition from low community and low society to higher community. This transition was achieved through a community-led collaborative governance process by implementing a strategy of empowerment planning. Although not generalizable, my findings raise an interesting hypothesis on a neighbourhood-level process and strategy for achieving such a positive transition in institutional arrangements. I draw on theory of network power to better explain the success behind the initiatives to date, and to theorize on expected future transitions towards higher levels of more balanced community/society interaction.

I will begin by discussing community/society interaction theory and its arguably seminal contribution in the field of new institutional economics. The case study that follows evaluates the work done to date by the Jardim Gramacho Community Forum. Achievements, challenges, and future prospects are then discussed in context of theory on network power and community/society interaction theory. I conclude with a summary of my findings and proposed future research.

Community/Society Interaction Theory in New Institutional Economics

The field of regional economic development theory has long been struggling to explain why some regions grow faster than others, and why despite neoclassical predictions of convergence, a combination of technological change, and free-trade globalization accompanied by economic restructuring had coincided with increased regional polarization on a world scale.[2]

Government policies based on redistribution for social welfare and top-down industrial policies (such as the regional commissions in the U.S. between 1930-1950, growth pole strategies in Latin America, Italy and the Middle East between 1950-1970, and more recent structural funds in the EU) have in many cases failed to counteract the polarizing forces of globalization and to overcome the persistent under performance of lagging regions.

Economic sociologists, economists, and political scientists began to argue that the effectiveness of policies depended on the institutional context.[3] This proposition could explain the shortcomings of neoclassical theory and its updated version of new growth theory in finding generalizable growth equations (in other words the economic impact of the institutional context could explain the extent of the error factor in growth regressions).

New Institutional Economics literature highlights the importance of formal and informal institutions on economic outcomes. Institutions refer to public and private economic institutions, governance structure, and social capital. Douglas North and his school provide a clear institutional framework which describes a continuum with "unwritten taboos, customs, and traditions on one end and constitutions and laws governing economics and politics on the other".[4] An ongoing debate in the broader New Institutional Economics literature can be characterized as a tug-of-war between proponents on either side of this continuum, with sociologists, geographers, and some economists stressing the importance of informal institutions on favorable economic outcomes (namely social capital, culture, and civil society), and most economists stressing the importance of formal institutions (namely the rule of law, property rights, the judiciary, and government institutions).

Robert Putnam[5] and Fukuyama[6] highlight the trust generated from institutions of community (social capital), while others have pointed to other benefits of communities such as lower transactions costs, public goods provision, improved market organisation, limiting moral hazard, free riding, mitigating information asymmetries, and aligning individual with collective interests.[7] These arguments have been supported with qualitative and quantitative studies.

Counter to these perspectives however, many have argued that

informal community institutions are a second best to formal societal institutions, and even propose that community institutions can harm economic outcomes through "rent-seeking, insider-outsider problems, clientelism, and nepotistic practices."[8]

Furthermore, scholars have proposed that high societal institutions in the absence of strong community institutions risk societal conflicts and consequently high transactions costs, poor conflict resolution, and inadequate public goods production in the fields of education, healthcare, human resource development, environmental management, and technological innovation. These public goods generate positive externalities and can be produced through widespread group organization that widens the constituencies for such goods.[9]

Rodriguez-Pose and Storper[10] transcend this ideological divide with their theoretical model of the complementary nature of both society and community. Society "generally refers to institutions that are defined by more transparent and codified rules"[11], such as those that create and enforce regulation and the rule of law; and 'community' refers to features of group life such as "traditions and social conventions, interpersonal contacts, relationships and informal networks",[12] often referred to as social capital and civic society in contemporary literature. They argue that both are necessary in order to counteract the potentially negative externalities of one operating in isolation from the other, and for the positive externalities of both to emerge, thus maximizing the problem solving ability of an area to adapt to change.

According to this theoretical model, three key incentives necessary for long-term economic development emerge through the optimal interaction of high community (characterized by bonding) and high society (characterized by bridging): Confidence; effective and acceptable distributional tradeoffs; and successful ongoing problem resolution.

The authors cite countries such as Finland, Norway, Denmark, and Sweden as examples of high community/society interaction. Such countries, they argue, have responded well to the challenges of globalization through superior problem solving capabilities, precisely because of their high community and high society balance. The pace of change in institutional arrangement in these countries will be slow because a balance has been struck, in this case fortuitously at the high end of the matrix. Equally balanced and slow changing institutional arrangements exist at the other extreme of the spectrum (worse-case scenario), with countries such as Iraq and Afghanistan, where war wiped out a great deal of pre-existing institutional arrangements, and Russia, where a misguided economic transition strategy had the same detrimental effect.[13]

Furthermore, equal levels of community/society development can interact in a multitude of ways, yielding very different outcomes depending on the specific ways in which societal frameworks and

communities are configured and interact. Countries such as France, Italy, Germany, and the United States have high levels of community and society interaction, albeit with different institutional arrangements yielding very different outcomes. In the European countries coordinated economies are manifest, while in the U.S. a more liberal economy has emerged.

Turning to the scale of the city and the region, political scientists Fung and Wright[14] offer important insights on the design characteristics of existing models of high community/society interaction, with their theory of Empowered Deliberative Democracy (EDD). They develop their theory following in-depth analyses of five case studies of institutional arrangements that have formally integrated the participation of local residents and stakeholders in various local government activities, including budgeting (Porto Alegre) and social services (Chicago).

EDD is characterized by two key design characteristics: bottom-up participation enriches the governance process with a variety of knowledge and experiences, increases accountability, and reduces the bureaucratic chain of decision-making, thus reducing patronage and corruption. This design characteristic is comparable to high community.

Centralized supervision and coordination are also essential for a functional EDD process, designed to increase accountability, allow for the coordination and distribution of resources, solve problems that cannot be solved locally, rectify pathological and incompetent decisions, diffuse innovation and learning across regions, and allow for cross-territorial benchmarking. This aspect of a functional EDD process is comparable to high society. The EDD model can thus be understood as a specific type of high community/society interaction at the regional or city scale.

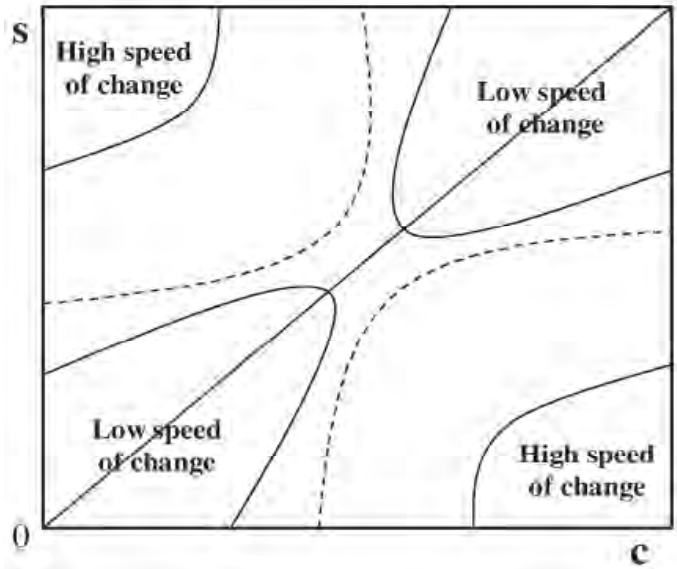
Community/society interaction theory is also consistent with the networked or associationalism paradigm that emerged out of the debate about competitiveness and cohesion.[15] Following evidence of persistent geographically uneven development, economic sociologists, economists, and political scientists began to argue that the effectiveness of policies depended on the institutional context.

These diverse schools of thought converged into what is known as New Institutionalism. This “new paradigm”, to quote Morgan,[16]argues that competitiveness and cohesion can be reconciled through collaborative governance at the local level by harnessing local assets and generating synergies through the collaboration and participation of a diverse range of stakeholders from public, private, and community organizations.[17] The goals of such collaborative governance could be social, economic, and/or environmental.

Moving from a static to a dynamic understanding of community/society interaction, the authors argue that the higher the imbalance between society and community (where one is high and the other low),

the faster will be the expected pace of change in response to exogenous or endogenous shocks (such as war or revolution) and/or processes (such as globalization or devolution). Note that the speed of change refers to change in institutional arrangements through social forces. This dynamic is illustrated in Figure 1 below:

Figure 1: The Speed of Change in the Community (c) / Society (s) Relationship



Source: Storper and Rodriguez-Pose (2006), "Better Rules or Stronger Communities? On the Social Foundations of Institutional Change and Its Economic Effects", Economic Geography 82(1): 1–25- Figure 3, pp. 15.

The (s) on the y-axis is society and the (c) on the x-axis is community, both ranging from low (zero) to high. The straight line represents all the possible points where community and society are equally developed (or underdeveloped). The optimal or best-case scenario of high community and high society interaction would place a socioeconomic entity (be it a neighborhood, a city-region or a country) towards the top right of the straight line. Conversely, a worst-case scenario of low community and low society would be towards the bottom left of the straight line. Suboptimal scenarios would entail an imbalance between community and society, whereby one is more developed than the other. The bigger the gap between society and community, the further the economic entity would be from the straight line (high community and low society for example would be towards the bottom right of Figure 1).

The authors argue that when community and society are balanced

(i.e. developed to the same extent anywhere along the straight line from low/low - bottom left - to high/high - top right), the speed of change of institutional arrangements will be slow. Alternatively, when there is an imbalance between the extent of community and society (where one is stronger or more developed than the other), the speed of change of institutional arrangements will be higher, and increase as the disparity between community and society widens. In other words the further the economic entity is from the middle straight line (whether towards the top left or bottom right quadrants of Figure 1), the faster the expected speed of change towards either better or worse-case scenarios of balanced community/society interaction (i.e. anywhere along the straight line).

The authors contend that the direction of change is more complex than standard theories predict, allowing a multitude of factors to direct change in numerous directions (positive or negative) depending on the context, including institutionalizing counter forces (or strategies) in response to changes in either community or society, rendering prediction and control much more difficult if at all possible. Rather than abandoning theory in light of this complexity, the authors call for "additional refinements in the way in which we understand that process can affect outcomes."[18]

This theory offers us a powerful theoretical understanding of the potential dynamics between community and society and their combined effects on development. It also offers us a framework for understanding the socioeconomic impacts of institutional arrangements in specific contexts,[19] and the expected speed of change of institutional arrangements at any given community/society balance.

Above all, it highlights the critical importance of civil society and social capital in interaction with formal institutions such as government and the judiciary and in socioeconomic development outcomes at various scales. This is revolutionary in the field of economics, where such considerations were considered exogenous to the economic development process by classical and neoclassical economic theories. This is arguably what civil society at multiple scales, including a global civil movement at a world scale, has been increasingly striving for over the past few decades, in a struggle to generate more sustainable and equitable development.

The movement toward sustainable development attempts to highlight the external costs of economic growth, and to internalize such costs into a priori decision criteria, thus aligning economic decisions with the needs of people (present and future generations) and the environment. The inclusion of stakeholders in governance processes through high levels of community/society interaction offers stakeholders whom otherwise would bear the burden of such costs the opportunity to insure they are accounted for in decision-making criteria.

Community/society interaction theory offers an economics-based theoretical argument for high levels of community/society interaction for achieving positive economic outcomes. Furthermore, it highlights the synergistic nature of community and society interaction, which in sustainability discourse has profound implications, as through their interaction with societal institutions such as government and the judiciary, civil society at any given scale gains the opportunity to leverage societal institutions to achieve its goals, and potentially align economic development with the needs of diverse stakeholders. For example, referring back to our discussion about internalizing social and environmental costs in decision criteria, through the interaction with societal institutions, civil society can potentially gain access to societal levers of control such as the rule of law, and consequently enforce the internalization of such costs through formal institutional arrangements. The process by which community can achieve such high levels of interaction with equally well developed society is precisely where the gap is in the literature, and where I hope to contribute, albeit fractionally, in this article.

In the case study that follows I will argue that the initiatives of the Jardim Gramacho Community Forum amount to precisely such a transition in institutional arrangements, in this case from a near worse-case scenario of low community and low society, to higher community.

Case Study: The Forum Communitario de Jardim Gramacho

This case study is based on in-depth interviews with participants from all four working groups of the Jardim Gramacho Community Forum and IBASE (The Braizilian Institute of Social and Economic analysis, a leading NGO facilitating the initiative), several visits to the neighborhood of Jardim Gramacho, attendance at several forum meetings, numerous informal conversations with participants and residents, and access to research conducted to date. My research was conducted during an eight month period between September 2007 and April 2008.[20]

I will begin with a brief background of the case study, followed by an analysis of the project's theory of change. An evaluation[21] of the process, outcomes, and obstacles to progress follows, using the evaluative model developed by Innes and Booher.[22] Achievements, challenges, and future prospects are discussed in context of the theory of community/society interaction and the theory of network power which I will discuss later. I conclude with a summary of our findings and proposed future research.

Case Background

Despite having the second largest tax base of the ninety-two municipalities of the state of Rio de Janeiro, Duque de Caxias is ranked fifty-second by the Human Rights Index, which includes life expectancy, education, and wages. Jardim Gramacho, a neighborhood of Duque de Caxias, is one of the municipality's poorest neighbourhoods and is home to one of Latin America's largest landfill, the Metropolitan Landfill of Jardim Gramacho, spanning over 40,000 square kilometers.[23]

An estimated sixty percent of Jardim Gramacho's 20,000 residents either directly or indirectly live off the landfill that lies at the heart of their.[24] Over 600 trucks dump an average of 8,000 tons of garbage per day from six municipalities including Rio de Janeiro, with detrimental health and environmental impacts.

Yet without this socio-environmental tragedy an estimated 3,000 official and unofficial 'catadores' or 'collectors' (people who collect recyclable material for sale) would not earn between $R600 and $R1,200 per month (between $265 and $530 at March 2009 exchange rates) collecting recyclable material and selling it off to the market.[25] These 'collectors', most of whom (sixty-seven percent) work seven days a week, many (thirty-seven percent) day and night, support a large part of the local population by spending their hard-earned income in local shops and bars, often entering a spiral of debt to finance their consumption.

In 2005, following civil disobedience by collectors which attracted the attention of the media and local government officials (they closed off the main artery to the landfill by turning over cars and setting them ablaze), local community organizations were brought together to collaborate for the first time. The Jardim Gramacho Community Forum (the forum from here-on) was launched with the support of the NGOs IBASE, FURNAS Centrais Electricas, and Comunidade COEP. IBASE is known for its community building and mobilizing approach to community development and is one of the founders of the World Social Forums through the leadership and vision of its director Candido Grzybowski.

As will become evident in the following section, the dynamics and strategies of the forum were not pre-defined or consciously planned, but rather emerged from genuine collaboration between diverse community organisations through a process facilitated by IBASE, founded on their explicit theory of change.

Theory of Change

IBASE's explicit theory of change is based on generating "active and participatory citizenship made up of social subjects struggling and working in their communities to build civil society, economy, and

power, all this in a spirit of equality and diversity."[26] IBASE believes this process to be an expression of radical democracy. This broad theory of change allows for each community they work with to invent their own 'theory of change', through the participation of community members, to fit their unique local contexts.

Forum participants decided to organize themselves into a unified voice that could speak for itself and approach local public service providers together to demand their rights to better access to public services. (Details of the process and how it came about will follow.) This strategy for change, which as will become apparent emerged from numerous collaborative meetings and innovative exercises, amounts to a theory of change synonymous with an empowerment planning strategy, whereby local stakeholders develop voice with the objective of increasing the responsiveness of formal institutions.

Empowerment planning is a product of advocacy planning and participatory methods. In advocacy planning, "planners speak for or advocate on behalf of marginalized communities."[27] Participatory methods implement "a process of social change that involves participants in identifying their own problems (research); acquiring the skills needed to address these problem (education and training); and implementing a plan (action)."[28] By adding participatory methods to advocacy planning, empowerment planning "attempts to mobilize and build capacity of disenfranchised communities to speak for themselves."[29] Empowerment planning is a specific type of collaborative governance process.[30]

Evaluation

I begin by evaluating the process of the forum, followed by an evaluation of tangible and intangible outcomes and finally major obstacles to progress.

The Process

The process can be categorised into three phases that reflect the three broad phases of collaborative planning[31] as outlined in Figure 2.

Figure 2: The Jardim Gramacho Community Form Process

PHASE I – Collaborative problem-setting

a. Activities:
   i. Interviews
   ii. Discussion groups
   iii. Participatory consolidation day

b. Products:
   i. Diagnostic of Jardim Gramacho (a research report on the state of the neighbourhood)

PHASE II – Direction setting, structuring and official launch of the forum

a. Activities:
   i. Various 'integration meetings' (collaborative meetings)
   ii. Launching of the forum structured around four 'working groups'

b. Products:
   i. Action plan (a printed high-quality color leaflet)

PHASE III – Implementation through individual and collective action

a. Activities:
   i. Training courses for individual community leaders
   ii. Meetings with local government officials and departments
   iii. Mobilising local residents around specific issues
   iv. Networking at national and international level forums
   v. Implementing other action points

Source: Author's interpretation of the forum process, based on the three-phased collaborative planning process developed by Gray, 1989-57.

Phase I: Collaborative Problem-Setting

In 2005, all known local community organizations were invited by IBASE for what Rita Brandão, IBASE's community organizer, described in an interview as "a discussion and action proposition for the neighborhood." That was the first time that diverse community organizations, many of whom had never met before, came together under one roof.

Participants were driven by a real and practical purpose to improve the quality of life for residents in Jardim Gramacho. One participant explains: "We were invited to join by IBASE. It was about how to help the community. What does the community need? We all had the same objective: To improve the neighbourhood." Another elaborated: "I always thought about questions relating to my neighbourhood. I just want it to be a nice place, a safe place... we have to struggle for change as opposed to wait for someone else to do something... I believe in a good future for this neighborhood and for our children."

Following the first meeting when a consensus emerged that collaboration and collective action was needed to improve the quality of life for residents in the neighborhood, IBASE conducted a series of interviews with participants to identify what people thought were the main problems in the neighborhood. This information was collated into a summary and shared with all participants in a public event (a participatory consolidation day). Participants were surrounded by the results of their interviews which were pasted across the walls. A public dialogue about the problems facing the neighbourhood took place on the basis of the information collated from all participants, and eventually a consensus emerged about the area's major problems. This shared meaning was captured by IBASE and made public in the format of a document called the Jardim Gramacho Diagnostic.[32]

The diagnostic was a very important document as it empowered participants who saw their words in printed format, and reflected a newfound shared perspective amongst participants who previously viewed their neighborhood from their narrow perspectives based on their areas of specialization. This document was based on two sources of information: the input of all participants and research previously conducted by professional researchers. No information was included in the document without complete agreement from all participants. The diagnostic thus united diverse participants with shared meaning, an integral force to the future of the forum.

Phase II: Direction Setting, Structuring, and Official Launch of the Forum

Various collaborative meetings and events followed the diagnostic, each with its unique dynamic for engaging participants through authentic dialogue.[33] From these innovative participatory events a consensus emerged around a unique network structure for the forum, one very different from the institutional set-up envisioned by IBASE that would have included a board of directors as an accountable, democratically elected body.

These innovative, collaborative, and participative events were a powerful way of engaging participants and generating interest. These initial events set the mood for subsequent meetings.

At the early stages in 2005 most participants had just met each other in these preliminary meetings and events, so levels of trust between participants were consequently low. Most participants only knew the few members from their sector of specialization, with whom they enjoyed higher levels of trust and friendship. Participants thus decided to structure the forum into four working groups, each one specializing on a specific sector: education; health; social programs and quality of life in the neighborhood; and work and income.

Following these collaborative meetings and events, the official

Jardim Gramacho Forum, a self-organizing network of diverse community organizations committed to a process of consensus building, joint learning and collective action aimed at increasing the quality of life of residents in Jardim Gramacho, was launched in March 2006. One participant explained: "Decisions are made through dialogue. It's always been easy to reach a consensus because we all have the same objectives."

Prior to the forum, each community organization worked in isolation on a narrow range of issues within their sector of specialization. Participants quickly recognized the potential of better serving the neighborhood by gaining a broader perspective of the problems facing their community and by working in collaboration with organizations from other sectors. In the words of one participant: "As trust increased, communication between organizations increased as well, and people started helping each other".

Through various integration meetings (collaborative meetings) within and between the four working groups, participants jointly developed a plan of action to solve the major problems identified in the diagnostic. The action plan followed the structure of the forum with each working group outlining a set of targets (identified in the diagnostic), and several clearly defined action points for achieving each of these goals.

PHASE III: Implementation through Individual and Collective Action

Once the forum was officially launched as an autonomous network, with a new sense of shared meaning and a broadening perspective amongst its diverse participants, the four working groups began implementing the action plan. This often required collective action across two or more working groups, with all four collaborating on many of the action points.

Approaching public and private service providers together, a strategy at the heart of their theory of change was reflected in each of the working group's action points. Despite separating action points across the four groups, all four approached service providers together, as a single unified network representing the neighbourhood of Jardim Gramacho. This critical mass surprised public service providers in particular, who were impressed with what they perceived as a new powerful political force in the community. Rita Brandão from IBASE explains:

> The forum is made up of around thirty organisations, each servicing hundreds or thousands of residents. The forum therefore became a powerful 'formador do opinao no bairro' (shaper of local public opinion). Consequently, local government departments had a high level

> of respect for the forum and its power to mobilize the local population. In fact their perceived power was higher than in reality."

As the forum began implementing its action plan it quickly became apparent that achieving the forum's goals meant challenging the status quo which was being maintained by a few people who possessed a great deal of political power in the area, and whose interests were served by it.

The above strategy of collectively lobbying public and private service providers was paralleled with several initiatives to mobilize local residents in support of the forum's demands by spreading awareness of the process and collecting signatures as evidence of popular support.

Two years after the launch in March 2006 the forum continues to meet on a monthly basis and each working group also meets separately once a month. The vast majority of action points have been executed with various degrees of success (see outcomes) while some remain in the pipeline, delayed due to a lack of time and perceived relative importance. Furthermore, participants have been to various training sessions and national and international forums, increasing their individual and collective capabilities and knowledge (discussed in more detail in a subsequent section).

From this analysis of the process, it is arguable that the forum followed a consensus building process as per Innes and Booher's[34] theory of consensus building,[35] and can thus be declared a genuine collaborative governance initiative. As summarized below, the process adheres to the criteria of a consensus building process, what Innes and Booher argue is a fractal of a collaborative governance process:

- The forum is a self-organizing network of diverse and interdependent participants mainly from local community organizations.
- They have engaged in authentic dialogue, and from this process they successfully developed shared meaning as captured by the diagnostic and the action plan.
- The action plan aims to achieve real and practical tasks through collective action, driven by real and practical purpose: to improve the quality of life in Jardim Gramacho, often by challenging the status-quo.
- The structure of the forum and its theory of change based on a strategy of empowerment planning have emerged from this collaborative process by fostering creative thinking with the support of high quality information of many types.

Outcomes

Over the past two years, through a process of authentic dialogue and collective action, the forum's diverse range of stakeholders achieved a set of tangible and intangible outcomes that continue to materialize and impact on the quality of life of residents in Jardim Gramacho. I will begin by examining intangible outcomes, followed by tangible outcomes.

Intangible Outcomes

On the whole, when participants first came together they were not acquainted, particularly those who operated in different community sectors. This is evidence of the lack of communication and collaboration between community organizations prior to the forum. Over time however the level of trust between participants began to develop, culminating in a board of directors being elected in 2007, which was needed to administer funds. A representative was chosen from each working group. As one participant explained: "Through dialogue we realized that our objectives were the same. Personally I don't usually trust anyone, but through our shared objectives we began to trust each other."

Over time, as trust developed, so did new personal and professional relationships. Organizations began to collaborate with each other by sharing customer bases, working together on feasibility studies, and co-managing projects. Participants also developed personal friendships and a sense of community emerged. One participant said: "Today we are much friendlier with each other and we enjoy a higher level of trust. We are more like a family now".

As well as evident increases in social capital, participants gained intellectual capital. Whereas prior to the forum participants concentrated on their narrow sectors of specialization, today participants enjoy a broad understanding of the multifaceted reality of their neighborhood, as evidenced by the diagnostic and the action plan. One participant explained:

> I knew a lot [before the forum] because I worked in the streets and I've always been interested in development. But with the forum I learned about other organisations as opposed to just education. For example I learned about health, employment and the plight of the 'collectors'. Now I feel I know about all the problems of the neighbourhood.

Furthermore, IBASE and other institutions sponsored specialized courses and events to meet the specific demands of many participants, whose newfound knowledge is shared with the network through discussions and actions. Four participants, for example, enrolled in a one day course on the environment organized by the state environmental agency; several consultants were invited to speak to the forum over a period of three days about the structures of social movements; and one participant attended a capacity building course organized by the Council of Rio de Janeiro.

Arguably the most important intangible outcome to emerge from this process was political capital. Participants learned to work together in collective action, and learned how much more can be achieved by collaborating on action points rather than working alone. Participants also learned to navigate a complex and politicized local and state government apparatus. They learned who are their allies and enemies and what are the major political bottlenecks standing in the way of progress (see 'Obstacles' below). They also learned to rally popular support for specific campaigns to influence public social service providers.

Finally, the process has led to numerous high-quality agreements between community organizations, which have produced mutual-gain solutions. These agreements are based around a common vision of problems, an agreed upon action plan of innovative strategies, and collective action that has materialized into numerous tangible outcomes.

Tangible Outcomes

Many of the goals identified and made explicit in the action plan were achieved by approaching service providers and demanding that service be extended to the neighbourhood. Others were achieved by applying for funding from NGOs and charities. As a direct result of participants' increased capacity to collaborate, apply for funding, manage funds and negotiate with service providers, the forum successfully applied for funding from NGOs, negotiated better service provision from government institutions, and generated synergies from the collaboration of local community organizations (members of the forum) on specific projects.

Tangible outcomes from collaboration between community organizations, increased funding and government service provision include the building of a state of the art center for the forum with conference rooms and multiple computer access points for residents (by successfully applying for NGO funding and managing the budget); extending roads and sanitation services to the entire neighborhood (by approaching government departments as a unified body); the building of a school and a community day care center, improved local schools with more courses, better scheduling, the construction of a library

and swimming pool, creating more direct and democratic channels for accessing school places, free literacy courses for adults, cultural events, the official registration of residents, and a public event for increasing awareness of health issues (achieved by raising funds from the ministry of education and non-governmental organizations, as well as better collaboration between the schools and other community organizations).

Furthermore the following products were created: the diagnostic and the action plan; a feasibility study for collecting separated garbage from residents (this was achieved with the help of the NGOs supporting the forum and promises to generate added value to the collectors); a feasibility study for a community agricultural patch; and the feasibility study for refurbishing the community sports center.

Obstacles

The biggest obstacles to progress were identified at the political/institutional (society) level, namely a dysfunctional system of democratic representation through the variador (the councilman with disproportionate power in Jardim Gramacho), and inefficient government institutions to create regulation and uphold the rule of law.

Dysfunctional System of Democratic Representation (Corrupt Leadership)

In theory councilmen are supposed to operate at a municipal level and the council is supposed to act as a democratic and representative body that ensures the legitimacy and accountability of the mayor and local government departments. According to the interpretation of interviewees, however, the system evolved contrary to its intended democratic ideals, with a single councilman concentrating on the first district of the municipality, and consequently the neighborhood of Jardim Gramacho (rather than all councilmen being accountable to the district), a sufficient geographical scope to secure votes for reelection.

Within this narrow geographic scope the councilman has allies whom he counts on for votes, in return for reciprocity in the form of political favors. Although the mayor and councilman enjoy some degree of autonomy, many of his decisions must gain the support of the council. The councilman is therefore engaged in a series of politically charged negotiations, trading support for decisions as negotiating chips. Furthermore, the councilman is supported by the mayor who in return gains his votes, adding to the complexity and lack of transparency of a dysfunctional political process in the first district of Duque de Caxias, and Jardim Gramacho by default.[36]

Jardim Gramacho falls under the jurisdiction of a councilman who

enjoys excessive authoritarian power within the first district of Duque de Caxias (where the neighbourhood of Jardim Gramacho is located). His undemocratic and corrupt approach to politics has affected the work of the forum on several occasions.

On one occasion, the forum had successfully collaborated with the council to relocate 466 houses from their precarious self-built shacks in a favela (an informal settlement of self-built shacks and houses, otherwise known as slums) lacking sanitation and electricity, to an area close by with soon to be built council housing. Residents were asked to register for relocation at the municipal school, chosen by the mayor's wife. The councilman who wields disproportionate power in this particular area turned up with his armed private bodyguards, and stood at the door of the registration room. No one was to enter without his permission. He subsequently turned fifty percent of households away claiming their shacks did no qualify for relocation. This allowed him to allegedly offer half the soon to be built council houses to his allies in return for votes.

In another example, the forum had generated popular support for building a community day care center by announcing the plan by loud speakers, distributing leaflets, and collecting signatures. The day care center was built with the support of the Secretaria de Acao Social (the state-level government department for social services), and the Secretaria de Educacao (the state-level education department). The same councilman claimed credit for the day care center however by erecting signs and spreading false rumors. It took a great deal of effort by the forum to counteract such false propaganda by mobilizing residents and spreading the truth about the true founders of the crèche. The truth is important because with false credit to the councilman he gains support and consequently votes, further increasing his power. Newspapers also reported a story whereby he allegedly physically assaulted the director of the State Education Department for supporting the forum in opening a direct channel for parents to find school places for their children. Prior to this initiative parents had to go through the councilman to apply for schools for their children.

Today the councilman continues to walk freely on bail and awaits trial, despite being arrested three times on charges of assault and association with drug traffickers. There is the possibility that he will be found guilty as charged, but the judiciary process is slow and might fail to reach justice when it does finally bring the case to bear, estimated to take place in at least two years time (2010).

Rita Brandão, IBASE's community organizer, explains why people do not simply vote the councilman out of power: "Jardim Gramacho doesn't have the political conscience to organise their voting patterns. People are primarily concerned with getting food to the table."

Participants have made allies with many cooperative local government staff members whom they consider to be effective, but the

problems are perceived to be with leadership and institutional level. I will now turn to explore the obstacles at the institutional level.

Inefficient Institutions

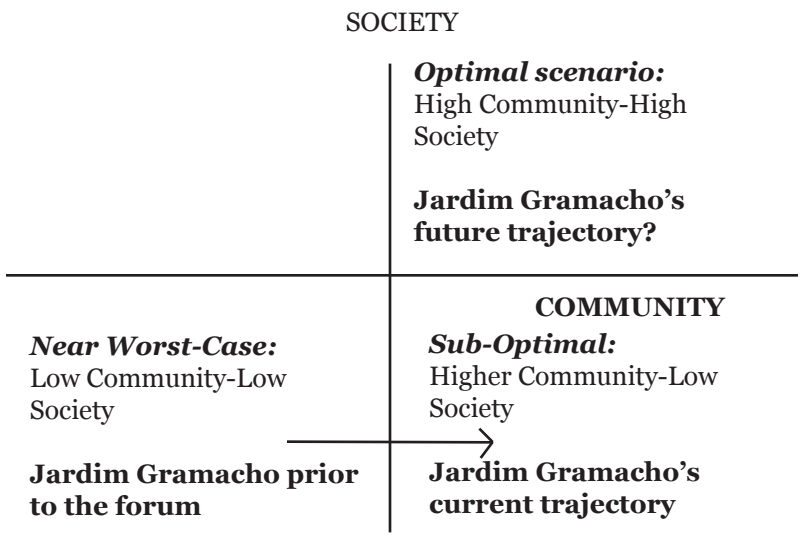
No institution exists in Jardim Gramacho to manage the occupation of land and the building of shacks (favelas). It is in the interests of the drug traffickers to maintain this status quo as the larger the favela, the larger their potential customer base and the easier it is for them to hide from the police, who until now allegedly only enter to collect bribes. So even if the forum is successful at relocating the 466 households to newly built council housing, they will be replaced with a new wave of occupants. Without regulation and enforcement of the rule of law, there will be no end to the problem of growing slums in the neighborhood.

In another example of inefficient institutions, the forum had successfully convinced the local government to deliver two ambulances for twenty-four hour access to areas where the existing service does not operate at night for security reasons. The local government convinced a private hospital to deliver the ambulances to a council car park, but the ambulances somehow disappeared. It is not even known if they were delivered in the first place or stolen en route. This lack of accountability, security and efficiency stands in the way of confidence and progress, no matter how successful the forum is at influencing the decisions of public service providers.

Achievements, Challenges, and Future Prospects

The forum has successfully filled a governance vacuum with nearly thirty community organisations from diverse sectors engaged in a collaborative governance process based on authentic dialogue and collective action, through a strategy of empowerment planning. Jardim Gramacho has arguably evolved from a state of low community and low society, to a state of higher community yet persistently low society. This change represents a trajectory from near worst-case-scenario toward a suboptimal scenario, a move in a positive direction as illustrated in Figure 3.

Figure 3: Jardim Gramacho's Shift from Near Worst-Case Scenario to Sub-Optimal Scenario



Source: Author's interpretation of community/society interaction theory (Storper and Rodriguez-Pose, 2006) in context of this case study

This transition is a great achievement and in the process the forum has filled a governance vacuum by empowering a previously disconnected community sector. This coalition formation has ensured that diverse community voices are heard and in many cases has been acted upon by existing low levels of responsive public sector service providers. Tangible outcomes have begun evening out access to basic services such as housing, sanitation, education, and infrastructure, thus improving distributional tradeoffs.

The widening rift between society and community, however, poses upside and downside risks, with several possible future trajectories including rapid progression towards the optimum scenario, and rapid regression to the worst-case scenario.

In order to maintain a positive trajectory and an eventual rapid progression towards the optimum scenario, and to avoid some of the risks associated with high levels of community in the absence of society, three existing conditions need to be overcome:

1. Unresponsive and corrupt senior government officials (Higher 'society')
2. Inefficient institutions that develop regulation and uphold the rule of law (Higher society)
3. Lack of active citizenship amongst residents (Higher community)

The theory of network power in collaborative planning[37] developed by Judith Innes and David Booher offers a useful framework for developing a next-level transition strategy to overcome these obstacles and consequently accelerate towards a balanced state of high community/society interaction.

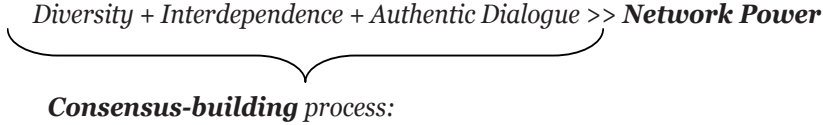
Network power is defined as "the shared ability of linked agents to alter their environment in ways advantageous to these agents individually and collectively".[38] In contrast to other forms of power, network power is distributed throughout the network for all participants to share, and is a product of shared knowledge, experience, and power of participants in networked collaboration, resulting in collective intelligence.

Network power emerges if three conditions are in place: Diversity (of participants), interdependence (between participants), and authentic dialogue (where all participants speak openly and in an informed way and are listened to and taken seriously).

Interdependence is a two-way relationship between two parties, whereby the self-interests of each party is dependent on the actions of the counterpart. (Note that when only one party's self-interests are dependent on the actions of the other, this constitutes dependence but not interdependence.) One could argue that the threat of closing down the only street that leads to the landfill through the collectors social unrest generated interdependence between the government and the community of Jardim Gramacho, which arguably contributed to the success of the forum in negotiating with government service providers for extended service. The civil disobedience of 1995 also arguably generated interdependence between the community of Jardim Gramacho and the NGOs. The community realized it needed help to change the status quo, and the NGOs realized they had an opportunity to work with the community towards community development.

The authors conceptualize the triad as integral to the consensus-building process, which they argue is a fractal of collaborative governance. Network power emerges from this process as illustrated in Figure 4.

Figure 4: How Network Power Emerges from Collaborative Planning



Source: Author's visual representation of Innes and Booher's (2002) theory of network power in collaborative planning

The authors believe that although most difficult to achieve in the short-term, through network power "deep structure may change more quickly now than at other points in history."[39]

From this theoretical model one can deduce that the success of the forum is contingent upon achieving a critical mass of diversity (assuming the consensus-building model based on authentic dialogue is maintained). Players are incentivized to join the collaborative network if a sufficient level of interdependence is achieved and recognized. A strategy for strategically increasing diversity is thus contingent on identifying potential partners whose knowledge, experience, or power are likely to benefit the network as a whole, and to generate or raise awareness of interdependence to the tipping point whereby joining the network becomes in the self-interest of the target player(s).

The forum has identified a great source of power embedded in the collective action of residents. In the words of one participant: "I think the biggest obstacle we face is the lack of conscience amongst the majority of residents in the neighbourhood. If people mobilized against the current political system, we would change it." Or as Rita Brandão argues, the reason residents do not simply vote the councilman out of office is because they do not have the political conscience to organize their voting patterns.

Engaging residents in the collaborative governance process would vastly increase the diversity of the network and consequently its network power. This in turn would impact the self-interests of potentially institutionalizing actors in government institutions, who would either become incentivized through political interdependence to join the collaborative process or be replaced by cooperative and responsive politicians through direct elections. This in turn would further diversify the network, potentially culminating in a critical mass of diverse participants for initiating a next-level transition to an optimum scenario of high community and high society. This creative and entrepreneurial process is arguably the next big challenge for the forum.

This strategy of engaging residents has already begun, but the process is slow. This strategy is being complemented by extending the network upwards by continuing to engage cooperative actors in existing government institutions, and by linking the network to other networks through national and international conferences. IBASE's official hands-on engagement in this process ended in January 2008, but as Brandão explains: "We will continue to support the forum through networking and strategizing."

Conclusion

Recent theoretical breakthroughs in the field of new institutional economics[40] highlight the synergistic nature of community/society

interaction, its socioeconomic impact at various scales, and the expected pace of change in institutional arrangements through social forces. I hope to have contributed to this emerging literature by analyzing a positive transition in institutional arrangements in a neighborhood of 20,000 low income residents from a near worst-case scenario of low community and low society to higher community. Although not generalizable, findings from this case raise an interesting hypothesis of a community-led institutional change strategy for testing in various contexts.

The theory of change behind the forum's success over the three year period since its launch in 1995 was based on a strategy of empowerment planning through a community-led collaborative governance process.[41] The process is based on a self-organizing network of diverse and interdependent participants engaged in authentic dialogue, united by shared meaning, and aimed at collective action driven by the real and practical purpose of improving the quality of life in the neighborhood. Network power, a source of non-excludable and non-rival power and collective intelligence (essentially a public good generating positive externality for group members),[42] emerges from this process for all participants to share.

Theory on community/society interaction highlights the risks and opportunities of the consequent imbalance between higher community and persistently low society. First, the resultant suboptimal scenario risks potentially negative externalities from higher community operating in isolation from equally developed societal institutions.[43] Furthermore, the speed of change in currently imbalanced institutional arrangements is potentially very high and unpredictable. If the forum loses momentum, the diverse community institutions risk regressing to their previous fragmented state of non-collaboration, taking the neighborhood back towards the worst-case scenario. Alternatively, a rapid shift towards the best-case scenario of high community and society is possible, albeit again not strategized at the neighbourhood level by the theory.

Drawing on the theory of network power, the collaborative governance process is strengthened by the diversity of participants and their interdependency. Continued success is thus contingent on further diversifying the network by generating interdependencies between diverse actors.

This next-level transition strategy would continue to build on the successful strategy of empowerment planning, complemented by a focus on extending the network toward the grassroots by engaging residents in the political process, and by extending the network upwards by targeting potentially institutionalizing actors in formal government institutions. The former would likely contribute to the latter as strategic voting power and civic engagement would align the interests

of politicians (and the formal institutions they manage) with those of their constituents through higher interdependencies (politicians would need votes and legitimacy from conscientious and politically-engaged residents).

Furthermore, consistent with network theory,[44] connecting the forum with other national and international networks by participating in various conferences and events would expose the forum to innovation-inducing knowledge from weak ties with such distant and distinct networks. Both of these strategies have been in progress, which is promising for the future outlook of the forum.

Community/society interaction promises to align social, economic, and environmental priorities through formal and informal institutional interaction at multiple scales. Unsustainable development occurs when costs are externalized from the economic considerations of companies and regions, thus paid for by people (present and future generations) and/or the environment. By including all stakeholders in economic development processes, the voice of those bearing the burden of these externalized costs (or their representatives) are heard, increasing the chances of these costs being internalized in economic development decisions. Shaping socioeconomic development outcomes through the collaboration of diverse stakeholders thus promises to steer development in more sustainable trajectories, precisely because these stakeholders will struggle to internalize all costs of economic growth in decision-making criteria. This is arguably a process of radical democratization at multiple scales, the primary objective of IBASE.

Further research, particularly long-term case studies to allow complex processes to play out, are necessary in order to test the applicability of this transition strategy in other contexts, and to document other transition processes and strategies of institutional arrangements at various scales.

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20 This research was conducted independently by the author who is solely responsible for the contents of this study.
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30 Collaborative governance can take many specific forms depending on context and strategies employed. Examples include: policy consensus building, community visioning, participatory budgeting, negotiated rulemaking, networking among social service delivery agencies, collaborative resource management, and the type under consideration in this case, empowerment planning.
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33 Where all participants speak openly and in an informed way and are listened to and taken seriously. E.J. Innes and D.E. Booher D. E., "Network Power in Collaborative Planning," *Journal of Planning Education and*

Research 21 (2002): 221-236.
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35 The authors use complexity science as a powerful metaphor for understanding why and how consensus building and collaborative processes can work more effectively in today's "complex, uncertain, fragmented policy context"; and the concept of communicative rationality, based on dialogue and joint learning by participants with common interests, as a framework for understanding and evaluating consensus building. They propose that the consensus building process may be a fraction of the larger phenomenon of collaborative governance, a type of complex adaptive system.
36 Although interviewees suggested that the geographic fragmentation of disproportionate power within the municipality's jurisdiction spans across the whole municipality of Duque de Caxias, my findings are limited to a single corrupt councilman with disproportionate political power in Jardim Gramacho, and cannot be generalized to the entire municipality.
37 Innes and Booher, 222.
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41 Consensus-building is a fraction of colaborative governance, as defined by Innes and Booher, *Network Power in Collaborative Planning*.
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Junk (Food) Policy:
The Failure of Nutrition Policy under the United States Department of Agriculture

Kate M. Hess-Pace

ABSTRACT
Obesity and chronic disease are unequivocally linked to poor diet. However, the federal government has had only moderate success administering nutrition policy. This paper asserts that chronic underfunding, competition with agricultural interests, and lack of oversight have interceded any real attempts at nutritional reform. The United States Department of Agriculture (USDA) administers the bulk of nutritional policy in addition to supporting the nation's farmers and the food industry. These conflicts of interests have crippled effective nutritional policies, failing to support those in the country who most need access to nutritional food. Without a change at the federal level, the country's health will continue to decline.

America's health is in critical condition. According to the Centers for Disease Control and Prevention, 133 million United States residents have at least one chronic disease and this number is expected to grow to 157 million by 2020.[1] Despite the evidence that what we put in our mouths has a significant impact on our overall health, much of the nutrition policy administered by the federal government is ineffective. This catastrophic failure of federal nutritional guidance is due in large part to its secondary status behind an agricultural regime that has flooded the market with low-cost, high-calorie foods. The federal government has been unsuccessful at creating an integrated food and nutrition policy that directly serves the people of the United States. Over the last thirty years the United States Department of Agriculture (USDA) has attempted to administer policies that address widespread nutritional deficiencies and the growing obesity problem. Despite well-intended governmental officials, many of these policies have been largely ineffective due to contradictory agricultural policies, lack of oversight, and chronic underfunding. The result is a food policy that reflects the politics of agriculture rather than nutritional science. The policies of the USDA have failed to address the real nutritional concerns facing the United States and have led directly to the current obesity crisis we are faced with today.

The USDA is the lead agency charged with the administration of nutrition policy. When Americans were not getting enough food, it was logical to position nutrition policies under the same Department that

could provide a remedy. However, the days of scarcity are long gone, and while serious issues of malnutrition and poverty exist, the United States is flush with food. For instance, the U.S. Food Supply provides 3900 calories per person per day, nearly twice the recommended amount.[2] This sheer enormity of available food is a direct consequence of a "regime that's worked to increase agricultural efficiency."[3] This excess supply has manifested in the form of skyrocketing obesity rates. As of 2006, the Centers for Disease Control and Prevention estimate the prevalence of obesity at thirty-three percent. In addition to a high economic cost, obesity contributes to a range of troubling health conditions, including coronary heart disease, Type 2 diabetes, cancers, stroke, and liver disease.[4] Between the dollars spent by the USDA to market agriculture through checkoffs, agricultural subsidies supplied by the Farm Bill, and the billions of marketing dollars spent by the food industry to attract consumers to their products, nutritional policies have failed to employ any meaningful reforms in the way of protecting America's dietary health. The federal government must begin to take nutrition policy as seriously as it takes other health concerns and put into place reforms that help the consumer make educated choices to protect the health of themselves and their families.

The USDA spends approximately forty-eight percent of its budget, $45.39 billion, on administering Nutrition Programs.[5] The four major programs implemented under today's USDA are as follows: the *Dietary Guidelines for All Americans*, released jointly with the Department of Health and Human Services, which informs the nutrition standards for all food and nutrition policy; the MyPyramid Food Guidance System, a 2005 update on the traditional food pyramid, which provides a graphical interpretation of the *Guidelines* as well as exercise recommendations; the National School Lunch Program, a meal program operating in schools offering meals at low or no-cost; and the Supplemental Nutrition Assistance Program, formerly the Food Stamp Program, which provides food assistance for low-income families. However, despite the hefty allocation for nutrition programs, the USDA's primary allegiance is aligned with agricultural interests.[6]

In this paper, I trace the roots of nutrition policy under the USDA. Next, I look at three of the largest nutritional policies in practice today: the National School Lunch Program, the Food Stamp Program, and the nutritional guidelines published jointly by the USDA and the Department of Health and Human Services. In addition to examining these programs, I provide examples of USDA agriculture policies that work to circumvent the intention of these policies. Ultimately, I argue the federal government has failed to create any substantive nutrition policies and as a result has created a public health crisis.

From Scarcity to Abundance: A Brief History of Agriculture & Nutrition Policy under the USDA

The USDA has been the lead nutrition policy administrator since its creation in 1862. Hailed as the "People's Department" by President Lincoln, the Agriculture Act stated that one of the duties of the Department of Agriculture "…shall be to acquire and diffuse among the people of the United States useful information on subjects connected with agriculture, rural development, aquaculture, and human nutrition."[7] In addition to ensuring a safe and reliable food supply, the newly created USDA interpreted this statute as a mandate to distribute nutritional advice and guidelines. Much of the focus of the USDA was on prevention of dietary deficiencies; infectious diseases were the leading causes of death at the turn of the century and these diseases were particularly aggravated by poor nutrition.[8] The practical placement of nutrition policy in the Department of Agriculture meant that struggling farmers' crops could be harnessed to prevent malnutrition. Much of the Department's focus was on programs that simultaneously strengthened agricultural production and provided low-cost food to Americans.[9]

During the Depression the Federal Government expanded its role in the agriculture market, ultimately shaping the price of specific commodities. President Roosevelt pledged, "Continued deep interest in a problem that is not just a farmer's problem because, as I have said before, your prosperity is felt in every city home, in every bank and in every industry in the land."[10] Roosevelt signed into the law the Agriculture Adjustment Act (AAA) of 1933. The Act established minimum prices for six commodities, including grains, cotton and tobacco, that would be guaranteed by the government.[11] As a result farmers across the country switched to produce cotton and wheat because they were paid a higher premium for these crops, thus abandoning less lucrative harvests of fruits and vegetables. Intended to be temporary assistance to family farms, the price support and subsidy policy of the AAA have remained intact and expanded into the modern-day Farm Bill.[12] The federal subsidies and price supports have shaped the price of specific foods heavily influencing the consumer demand and thwarting some of the efforts made to direct people to more nutritious foods.

By 1948, all of the vitamins required by the human body had been identified.[13] Despite this advancement in knowledge, the USDA consistently released vague nutritional information.[14] Food supply had declined between 1909 and 1950, a product of people moving off farms and into cities. The decline in the food supply is, in part, an explanation for why obesity rates did not sky rocket in this period, despite substantial movement toward a more sedentary lifestyle. However, beginning in 1965, the food supply spiked, flooding the U.S. market with excess

food and, in an effort to sell that food, flooded the American people with advertising.[15] The saturation of the market further increased under Earl Butz, President Nixon's Secretary of Agriculture. Butz developed the present agriculture industry landscape of large farms controlled by a few corporations. He sought to "liberate" farmers from the regulatory hand of government and plant crops from "fencerow to fencerow."[16] Butz's tenure as Secretary aligned with the development of high-fructose corn syrup (HFCS) by food scientists in Japan. By the mid-1970s corn production reached to an "all-time high" as producers found new ways to put corn into products ranging from baked goods to frozen foods.[17] The increase in the use of high-fructose corn syrup has paralleled the rising obesity rates in the United States. Due to the low cost of corn, the sweetener replaced sugar in a vast array in foods. The abundance of HFSC in packaged and processed foods may be one significant contributor to the 400 per day calorie increase consumed from 1980 to 2000.[18]Author of *Fat Land: How Americans Became the Fattest People in the World,* Greg Critser writes that by the 1980s Butz's impact was clear: "Prices on almost every single commodity were down… Butz had delivered everything the modern American consumer had wanted. A new plentitude of cheap, abundant and tasty calories had arrived."[19]

These historical circumstances and political developments led to the contemporary formulation of the USDA and its policy regime. While the USDA's structural format and responsibilities were in large part formulated to address social ills and do so at first, their priorities have in large part been dedicated to the agricultural industry as opposed to the American people. The emphasis on supporting farmers in order to produce an abundance of inexpensive foods has been at the expense of public health. It is hard to conceive that the USDA can manage both the needs of the agriculture industry and still deliver the requisite policy for a well-nourished society. This may justify moving nutritional policy out of the USDA and into a department more familiar with public health policy. By examining a few of the USDA's largest nutritional programs, this paper seeks to argue that nutrition policy is largely losing out to other priorities with a substantial cost to our nation's health.

National School Lunch Program: Tater Tots and Chicken Nuggets

The National School Lunch Program (NSLP) is the largest and the oldest of all the child nutrition and food assistance programs.[20] It is designed to feed public school children whose families otherwise may be unable to provide, although the program is available to all children. The Program was created in 1946 as, a measure of national

security to safeguard the health and well-being of the Nation's children and to encourage the domestic consumption of nutritious agricultural commodities and other food, by assisting the States, through grants-in aid and other means, in providing an adequate supply of food and other facilities for the establishment, maintenance, operation and expansion of nonprofit school lunch programs.[21]

When the NSLP was created, Congress was concerned about nutritional deficiencies and malnourished children. The subsequent Child Nutrition Act of 1966 expanded food assistance, adding the School Breakfast Program, the Summer Food Service Program, and the Child and Adult Care Food Program.[22] A policy of providing agricultural commodities to the schools at no cost was a logical merger of USDA functions, providing for the nation's nutritional needs and benefiting farmers who had excess supply. The NSLP subsidizes lunches for low-income children by directly donating commodities to the program. In his article "Nutrition, the Historian, and Public Policy: A Case Study of U.S. Nutrition Policy in the 20th Century," Vivek Bammi writes,

> In the Act there is a clear association between the health of the nation's children and the welfare of the farmer who wished to dispose of surplus agricultural commodities. The Act states that: 'Each school shall . . . utilize in its lunch program commodities designated from time to time by the (Agric.) Secretary as being in abundance, or commodities (purchased under the authority of the Act of August, 1935) donated by the Secretary.' In addition, although the federal government was committed in principle to a school lunch program, the establishment of eligibility standards as well as the actual operation of the program was left entirely in the hands of local authorities.[23]

Federal statute requires that school lunches meet the *Dietary Guidelines for all Americans*, meaning that no more than thirty percent of an individual's calories are derived from fat. Yet, the donations do influence the content of the meal, and the decisions about which foods to serve and their preparation is left to school authorities.[24]

Today the USDA provides school districts with 180 "various commodity food items," totaling nearly $1billion. According to Healthy Eating Research, a program of the Robert Wood Johnson Foundation, more than 50 percent of commodity foods are processed before arriving at school, generally meaning that fat, sugar, and salt are added. A product that may have begun healthy (white meat chicken) often becomes junk food (chicken nuggets).[25] The pre-processing of foods for

school lunches is due in part to the chronic underfunding of the NSLP, leaving many schools without kitchens or staff.[26] In California school districts, eighty-two percent of the commodity funds were spent on meat and cheese, while only thirteen percent was spent on fruit, vegetables, and legumes. This is a critical policy oversight when childhood obesity is reaching a national epidemic; nearly one-third of U.S. children and teens are overweight or obese.[27] According to a federal study, school lunches frequently resemble fast food meals with thirty-eight percent of calories derived from fat.[28] A report issued in July 2008 by the USDA raised the question "Is NSLP Making Children Overweight to Support Agriculture?" The report acknowledges critics' claims that the commodities program forces schools to accept higher fat foods, such as meats and cheeses. While the report reiterates that schools are required to follow the nutritional guidelines set forth in *Dietary Guidelines*, it acknowledges that ninety-five percent of NSLP participants exceed the recommended level for sodium and that two-thirds of schools exceed the recommended fat intake. The study concludes, "The program is making children a little overweight while contributing a little support for agriculture."[29]

It is not clear to what extent the NSLP contributes directly to childhood obesity. However, it is clear that the lunches provided are not particularly healthy and that this is a consequence of the relationship of agriculture to the program. The importance of the NSLP cannot be understated; in most American cities the School Lunch Program is the single most important food source for children from low-income families.[30] Childhood obesity has skyrocketed in the United States leading to a host of related physical problems. For example, in prior years only Type 1 diabetes was common in children. Type 2 (formerly called adult-onset diabetes) was more commonly seen in older adults and is generally obesity related. However, Type 2 is growing among children and one third to one half of all childhood diabetes cases diagnosed today are Type 2.[31] Due in part to the lack of regulatory oversight from the federal government, state and local organizations and school districts have been calling for reform to the school lunch programs and to curb some of the foods available to students throughout the day. School districts across the country have implemented various programs to try to support healthy eating within local schools.[32] While it makes budgetary sense to pass off agricultural commodities to schoolchildren, it does not make for sound nutritional policy. As a result of the intertwined relationship between the NSLP and agricultural commodities, the NSLP has failed to provide a solution to the corollary between low-income children and nutritionally-deficient diets. While the National School Lunch Program provides federally funded meals for schoolchildren, it is one of many programs that supplement families' groceries. The NSLP needs to become recognized for the vital program that it is and receive

the funding allocation required to administer the program such that the recipients are fed healthful meals.

Food Stamps: Can Low-Income Americans Afford to Eat Healthy?

As part of the 2008 Farm Bill, the Food Stamp Program was renamed as the Supplemental Nutrition Assistance Program (SNAP) in an effort to emphasize the nutritional aspects of the food assistance program.[33] However, for most of its forty-five year history, the program was referred to as the Food Stamp Program. The Program was implemented following the Food Stamp Act of 1964. There was a similar program under New Deal legislation, but it was discontinued following recovery from the Depression. The Act authorized the Secretary of Agriculture to create a program to "permit lower income households to receive a greater share of the Nation's food abundance" and provide households with a "nutritionally adequate diet."[34] The Secretary of Agriculture was authorized to determine the costs of a "nutritionally adequate diet," which at present levels sets the maximum monthly allotment for a family of four at $588, approximately $1.75 per meal per person in the household.[35] While this allotment is certainly not a sizeable amount of money, if fruits and vegetables were subsidized, instead of their calorie-dense counterparts, we would see a heightened ability for those on food stamps to be able to eat a "nutritionally adequate diet."

Unfortunately, the principles that shape SNAP are rendered ineffective in light of the subsidies to those crops notoriously used in processed foods. There is a strong correlation between poverty and obesity; the five poorest states are in the top ten for obesity rates.[36] It is counter-intuitive that those with the smallest bank accounts would have the largest waistlines, but subsidies have driven down the cost of junk food, while providing little in the way of fruit and vegetable support. There are five major subsidies provided by the USDA in the Farm Bill: corn, soybeans, wheat, rice, and cotton. Three of these (corn, soybeans, and wheat) are key ingredients in processed foods and explain why a product such as a Twinkie, with thirty-nine ingredients, is less expensive than a package of carrots, which has one ingredient.[37] These subsidy arrangements mean that a savvy person on food assistance will receive more caloric payoff from purchasing heavily processed foods than purchasing healthy alternatives. In fact, an obesity researcher at the University of Washington found that one dollar could buy 1200 calories in cookies or potato chips and a mere 250 calories in carrots.[38] In addition to the correlation between poverty and obesity, there is a clear link between food insecurity and obesity. Executive Director of the New York City Coalition Against Hunger, Joel Berg, describes hunger and obesity as "flip sides of the same malnutrition coin."[39] According to

a USDA survey, most low-income respondents spent their limited food budget on calorie-dense foods that were largely comprised of sugars and fat.[40] Furthermore, participants are more likely to suffer from anemia and iron deficiencies than their non-participating counterparts.[41] Not only do those receiving food stamps have a higher chance of obesity, there is a substantial likelihood that their basic nutritional requirements are not being met.

Similar to the National School Lunch Program, SNAP is a vital service that provides assistance to roughly twenty-five million Americans – over half of which are children.[42] SNAP participants are not getting the requirements of a healthy diet and instead the program is contributing to the poor health of lower income Americans. While the USDA has attempted to advocate for good nutrition through various informational campaigns, such as the food pyramid, the Department has failed at providing healthy food at an affordable cost to low-income Americans.

Politics & Pyramids: Competing Voices on What to Eat

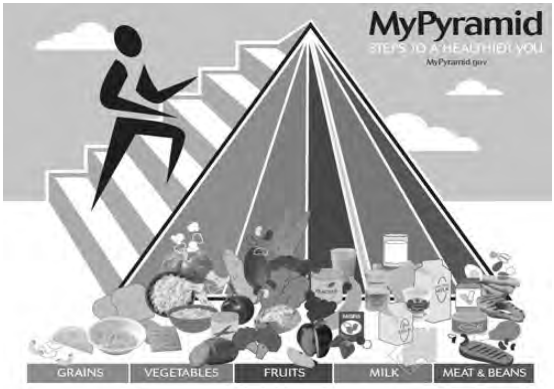
The USDA issued a major publication on nutritional advice, *Nutrition and Your Health: Dietary Guidelines for Americans,* in 1980. With little input from external scientists, the *Dietary Guidelines* prescribed seven suggestions for healthy living, focusing more on "qualitative rather than quantitative" advice.[43] Following the 1980 publication, a Senate appropriations committee report directed that a committee be established to review scientific evidence and recommend revisions to the *Dietary Guidelines*.[44] This action, during the Carter Administration's last months in office, resulted in the USDA acting to institutionalize the distribution of nutritional advice by creating the Human Nutrition Information Service (HNIS). The publication of nutritional guidelines and the subsequent food pyramid is wrought with political battles. These battles occur, in part, because nutritional education and guidelines cannot contradict the USDA's dominant goal of supporting the business of agriculture.

The food pyramid transforms these guidelines into a visual image, attempting to translate the *Guidelines* into a template for everyday use.[45] The first food pyramid was released in 1991, after three years of study and significant controversy. This initial pyramid was a hierarchical, four-level pyramid with grains and cereal at the base, fruits and vegetables on the next level, followed by meat and dairy, and finally at the tip of the pyramid are fats oils and sweets, which the readers are advised to "use sparingly." The pyramid was subject to several revisions, many at the behest of the food industry, including changing the title, "Eating Right" to "Food Guide," in response to complaints from Kraft Foods that the "title infringed on its copyrighted line of prepared meals."[46] Once published, the pyramid became a marketing tool widely used in

educational materials and product packaging, becoming one of the "best known nutritional education devices ever produced."[47] In 2005 the USDA released "MyPyramid" a revised version of the pyramid that stresses physical activity as well as divides foods into categories. The revised pyramid is flipped on its side and uses a set of colorful bands to demonstrate the proportions of each food group that should be eaten in a day. The largest bands belong to fruits and vegetables, while the smallest bands represent fats, oils, and sugars. To create the new pyramid, the USDA hired an outside marketing group for $2.5 million to redesign the image. Despite the hefty price tag, the new pyramid does not provide specific guidelines as to how to eat healthy. This makes it difficult to garner any genuine steps to take to improve one's diet.[48] In fact, while eighty percent of Americans recognize the food pyramid, only two to four percent actually eat according to its principles.[49] The USDA's own data shows that added fats and oils, the smallest band of the pyramid, provide more calories per day than any other food group.

Figure 1: 1991 Food Pyramid

Figure 2: 2005 Revised "MyPyramid"



The discrepancy may be due, in part, to the competing voices trying to capture the hungry consumer's dollar. However, these voices do not come solely from the private sector. The USDA administers a large marketing project: the checkoff program. A checkoff is a fixed fee administered by the USDA that is levied to agricultural producers and used for research and promotion of agricultural commodities. Checkoff dollars are what fund various ad campaigns, including "Beef. It's what's for dinner," "Pork. The other white meat," and "Ahh, the power of cheese." The USDA plays a large role in the implementation of the checkoff programs, including the approval of a checkoff plan and veto power over the final advertising message.[50] Previously, Congress had to approve each checkoff program individually, but the Federal Agricultural Improvement and Reform Act of 1996 gave the USDA "broad-based authority to establish national generic promotion programs."[51] The USDA appoints members to a governing board, comprised of mainly industry members, but the Department of Agriculture's role includes creating, implementing, and approving the checkoff plan, including final veto of all advertising messages.[52] The current checkoffs are beef, pork, soybeans, eggs, cotton, dairy, mushrooms, honey, peanuts, popcorn, potatoes, watermelon, cultivated blueberries, Haas avocados, and mangos.[53] The checkoff programs with the highest amount of money appropriated to them also are those commodities with significant levels of saturated fat; dairy, beef, and pork have the highest revenue of all of the promotional campaigns.[54] Similar to the farm subsidies, checkoffs are at odds with the nutritional policies of the USDA. The Department is simultaneously telling Americans to "use fats sparingly," while promoting dairy, beef, and pork on television and in print ads. This may explain why according to the USDA's Continuing Survey of Food Intakes by Individuals, fat consumption has increased over the past few decades.[55] While the food pyramid is well known, so are many of the promotional campaigns, which with a marketing team behind them, may be more successful at influencing American's food purchases. The checkoff program is just one example of the USDA releasing conflicting messages to the public. The Department cannot expect to maintain its legitimacy as the federal nutritional resource, while continuing to promote products which have shown to have negative impacts on the human body.

Is Nutrition Merely a Matter of Personal Responsibility?

What people choose to eat is, to varying degrees, a personal choice and some assert that obesity is merely a matter of self-restraint. This is further complicated by the fact that people outside of metropolitan areas are heavier than urbanites, which reinforces the perspective that it is a liberal, upper-class aesthetic driving concerns

about what people put in their mouths.[56] However, the reality is much more complex than the individual freedom versus government control dichotomy. First, there is a problem of asymmetric information between the consumer and the producer. American food companies spend $36 billion to market food each year. These messages spent on advertising and advocacy groups are louder, flashier, and more colorful than the nutritional science provided through informational pamphlets and government administered websites. Marion Nestle, author of *Food Politics: How the Food Industry Influences Nutrition and Health,* demonstrates this point by comparing the $1 million the National Cancer Institute spent on its "Five a Day for Better Health Campaign" to the $32 million spent in the same year to market Cheez-Its.[57] In many cases, the consumer does not arrive with the information required to make an accurate, informed decision regarding their health. Second, personal responsibility "does not exist in a vacuum;"[58] the negative externalities of obesity extend to all of society. For example, the Centers for Disease Control and Prevention estimate the cost of obesity in 2000 at $117 billion.[59] This cost affects society in a variety of ways including higher insurance rates. Finally, people must eat in order to live. This has compelled the government to implement safety standards to protect people in the short term. It may be necessary to expand our definition of food safety to include both short and long term concerns. Nutrition policy has failed to protect Americans from some of the most extreme health conditions, and while personal responsibility is one part of the problem, the policies, subsidies, and regulations on the federal level impact the choices we make at the grocery store.

Nutrition Policy: Rectifying a Failed Policy

Over the last thirty years the cost of fresh fruits and vegetables has increased nearly forty percent, while the price of soda has decreased twenty-five percent.[60] This is a direct consequence of USDA policy and its unremitting support of America's agriculture industry. If the USDA were to implement effective nutrition policies the political consequences would be immense. Nestle writes,

> Food companies are well aware of the economic implications of reversing the obesity epidemic, as are government agencies. Economists at the U.S. Department of Agriculture calculate that 'large adjustments' would occur in the agriculture and processed food industries if people ate more healthfully. That threat is one reason why food producers contribute generously to congressional campaigns, and why federal agencies have failed to take the obvious first step: a national obesity-

> prevention campaign in response the Surgeon General's 2001 Call to Action. Such a campaign would have to address dietary aspects and include messages to eat less as well as the far less controversial 'be more active.'[61]

The food and agriculture industries have disabled much of the efforts at effective nutrition reform because the expected impact on revenue. However, the government must begin looking at nutrition policy as one of the most important governmental actions in the coming years.

There are several policies that would help assuage the obesity crisis. First, implementing more regulatory policy could be particularly effective. Countries with more regulations on the nutritional quality of the food supply are seven percent less obese than non-regulated countries.[62] Second, placing a tax on foods deemed injurious to public health might drive down demand. Big Mac prices are an approximate measure of food costs in various countries; countries in which Big Macs cost more have lower numbers of obesity than those countries where they cost less.[63] Third, the government must begin to subsidize healthy foods to make them affordable for all Americans. The USDA classifies healthy food through the Healthy Eating Index. It assigns points to foods based on nutrient density. The Index could be used as a metric to subsidize certain foods in order to promote their consumption. Without a subsidy, a message such as "eat more salad," in effect encourages a low-income family to spend more money.[64] Finally, the government should create policies to ensure that all Americans have access to healthy food. In many areas of the country, particularly areas of urban and rural poverty, there is little access to fresh fruits and vegetables and residents are left to shop at convenience stores full of processed foods. Eliminating the barriers to eating healthy food is the first step to stopping obesity in some of the poorest areas of the country. This can be achieved through federal support of local programs such as community gardens, farmers' markets, and produce delivery operations.

Federal nutritional policies have failed to make a positive impact on Americans' health. While it once made political sense to authorize the USDA to administer nutritional guidance – when the country was underfed – it may be prudent to move nutrition policy to an agency charged with public health, such as Health and Human Services. Whatever department begins to provide the remedy, it is critical that nutrition becomes a top priority for the federal government. America is raising the most overweight children in history and unless there is a systematic government intervention, this young generation may be the first to "live sicker and die younger" than the generation preceeding them.[65]

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Report Review: Debt Sustainability in Africa
A Call for Attention

Denise M. Ziobro

Debt sustainability, while typically isolated within developing countries, has become a global issue due to the recent awareness of its potentially catastrophic worldwide macroeconomic effects and thus requires increased international policy attention and action.

Given the relevance of this policy issue, the author chose to review the most thorough analysis and one of the most definitive works on debt sustainability in Africa, The United Nations Conference on Trade and Development's (UNCTAD) 2004 publication: *Economic Development in Africa: Debt Sustainability in Africa, Oasis or Mirage*, which is available both online on UNCTAD's website[1] or in print.

Debt sustainability as defined by the World Bank is, "the ability to manage debts so they do not grow and impede economic stability and growth."[2] Obstacles to achieving debt sustainability are prevalent in countries that face high levels of poverty, unemployment, and low levels of economic growth. African nations, that account for thirty-four out of the fifty least developed countries[3] and more than eighty percent of the world's highly indebted poor countries (HIPC)[4], face tremendous debt sustainability challenges. The continent of Africa's total debt increased from $11 billion in 1970 to a high of $340 billion in 1995 during the structural adjustment crisis,[5] and then subsided to just over $200 billion in 2000[6]. The African continent received "some $540 billion in loans and paid back some $550 billion in principal and interest between 1970 and 2002. Yet Africa remained with a debt of$295 billion, and ultimately, Africa's debt burden has been a major obstacle to the region's prospects for economic growth and investment and poverty reduction."[7] Africa's large amount of debt has hindered private and public investment primarily in infrastructure by failing to create an 'enabling environment'[8] for investment. "By undermining critical investments in health and human resource development,"[9] Africa's debt has generated numerous macroeconomic consequences by compromising, "some of the essential conditions for sustainable economic growth, development, and poverty reduction."[10]

Although debt sustainability challenges have mostly been confined to the developing world, their macroeconomic consequences, which could hinder worldwide economic growth, increase GDP volatility, and

dramatically increase the national debt of developed and developing nations, no longer make this a problem for developing nations to address alone. Creditors of African debt including developed nations and multilateral organizations need to take a more active role in ensuring African nations achieve debt sustainability. Prominent policy practitioners, including members of Europe Aid[11] as well as Dr. Jeffery Sachs of the Columbia University Earth Institute have recently called for greater worldwide attention and action for developing countries to achieve levels of sustainability through economic growth projects driven by higher levels of investment in infrastructure.

Economist Dr. Jeffery Sachs, Director of the Earth Institute at Columbia University and special advisor to the United Nations Secretary General Ban Ki-moon, argue that, "developed countries should agree to channel considerable savings to developing countries to finance the scale-up of sustainable investments"[12], which would have numerous positive effects for improving economic growth, ultimately by helping countries to manage and reduce their debt.

Dr. Sachs also observed that the recent, "G-20 meeting in London on April 2, (2009) offers hope for a true global effort to repair the failing world economy. This is the time and place to launch the global drive toward sustainability. If we fail to meet the challenge, the global crisis will endanger the world for years to come."[13]

For the remainder of this review this analysis will present UNCTAD's findings, offer critiques, and provide recommendations for greatly needed future policy and research

Analysis of Findings

The report first introduces the context of African debt as a crisis that initiated with the worldwide debt crisis in the late 1980s, which was exacerbated by the oil shocks of the 1980s and the failure of the structural adjustment program in the late 1980s to mid 1990s. Based on this background information UNCTAD states that the report will address four questions:

1. "What level of debt is sustainable for countries in which the vast majority of the population lives on under $1 a day per person?
2. Have debt sustainability criteria been based on internationally recognized benchmarks such as those of the Millennium Development Goals (MDGs) or on objectively and theoretically verifiable criteria?
3. What is the relationship between Africa's total external debt stocks and the actual amount of debt serviced?
4. Is complete debt write-off a moral hazard or a 'moral imperative' ?"[14]

After providing a brief background on debt sustainability and presenting the researchable questions the report discusses the HIPC initiative, an initiative driven by the Bretton Woods institutions the World Bank and International Monetary Fund (IMF). The HIPC initiative is designed to help developing nations "meet their 'current and future external debt service obligations in full, without recourse to debt rescheduling or the accumulation of arrears, and without compromising growth'."[15] The HIPC initiative is "a unique debt relief package compared to the traditional debt relief approaches, as it seeks to reduce debt stocks to sustainable levels subject to the satisfactory policy performance of beneficiaries, while situating debt relief within a framework of poverty reduction."[16]

Despite its numerous goals the HIPC initiative has encountered challenges in its implementation which have hindered its effectiveness including "under funding, excessive conditionality, restrictions over eligibility, inadequate debt relief and cumbersome procedures."[17] These challenges led UNCTAD to provide numerous criticisms of the program, which included concerns regarding: (1) its unnecessarily lengthy implementation, (2) the possibility that initiative beneficiaries could not attain sustainable debt levels and maintain these levels in the long-term after reaching the completion point ,(3) that the initiative used ineffective criteria for determining indebtedness, and (4) the potential faulty selection criteria for determining that a country was a HIPC, because some equally poor countries such as Lesotho and Cape Verde are not classified as a HIPC, yet they are classified a LDC (least developed country), and thus are not eligible for HIPC debt sustainability funding. The fact that several poor countries are not eligible for HIPC funding, "simply reflects, or confirms, the inappropriateness of the HIPC eligibility criteria."[18] UNCTAD's criticism of HIPC selection criteria addresses its second researchable question and supports the strongly argued, "view in the debt literature that the Initiative's (HIPC's) debt sustainability criteria are not objective and lack a robust theoretical justification."[19] Ultimately, UNCTAD argued that the HIPC program is not an effective strategy to find a permanent solution to the African debt crisis and achieve debt sustainability.

Therefore, in response to these criticisms of the HIPC initiative and the report's four initial questions, UNCTAD offers three recommendations to address Africa's debt sustainability challenges.

First, UNCTAD advocates for shared international responsibility for addressing and ultimately finding a solution for Africa's debt crisis. UNCTAD calls for "the need for creditors and donors to guarantee new resource flows in grant form at levels sufficient to meet the financing gaps (in terms of meeting the MDGs) not only of African HIPCs, but also of other equally poor and debt distressed African countries."[20]

Secondly, UNCTAD provides a recommendation that addresses its first and last researchable questions. UNCTAD argues that that,

> The level of debt that is sustainable for countries in which the majority of the population lives on less than one dollar a day per person, is self-evident: considering the seriousness with which the international community is addressing the attainment of the MDGs, these targets should be used as a major benchmark for debt sustainability. This in turn implies that virtually all of the outstanding debt would need to be written off, as the resources needed to attain these goals are substantial.[21]

Therefore, UNCTAD proposes universal debt write off of African debt. This write off "is unlikely to cause financial distress to the International Financial Institutions (IFIs), as the amount involved is relatively small compared with their capital and could thus be absorbed through loan loss provisions as is the practice in the commercial banking sector."[22] UNCTAD further argues that,

> There is no greater moral hazard than the one entailed in constant restructuring and partial debt forgiveness based on creditors' perspectives and interests. On the contrary, moral hazard will be limited by dealing decisively with the recurring debt crisis of poor African countries through a truly permanent exit from constant rescheduling that establishes a basis for long-term debt sustainability for debtors within an appropriate framework of national and international policy measures. A complete debt write-off, therefore, becomes a "moral imperative", as it will guarantee resources to help meet the MDGs in Africa and assure an exit from the debt crisis for the continent.[23]

Despite this proposal, UNTAD noted that the political will necessary for this type of large scale initiative is not present.

Thus, UNCTAD offers its final recommendation, and argues that the

> international community could consider applying the principles of bankruptcy codes to international debt work-outs corresponding to the notion of insolvency under such codes. For this process not to be unduly influenced by the interests of creditors, it could be undertaken

> by an independent expert body that would adjudicate on the basis of a more comprehensive set of criteria for debt sustainability, including that of meeting the MDGs."[24]

In addition to providing the three recommendations detailed above, UNCTAD highlights three alterative modalities (within the context of the HIPC system) to address the shortcomings of the HIPC initiative and permanently produce sustainable debt practices including: (1) payment caps on debt service, (2) the human development approach, and (3) the MDG approach.

First, the payment cap initiative is based on the argument that "the remaining high debt burden of HIPCs constitutes a challenge to the central objective of the HIPC Initiative, 'to provide a greater focus on poverty reduction by releasing resources for investment in health, education, and social needs'." Furthermore,

> It is contended that a cap on debt service payments would protect HIPCs against deteriorations in the world economy, as their debt payment obligations would be adjusted to the lower levels of government revenues. Without payment caps, HIPCs are likely to remain highly vulnerable to currency depreciations, as they would need to spend more of their revenues to purchase the foreign exchange necessary to service external debt. Thus, without a mechanism to automatically reduce countries' debt servicing obligations, HIPCs could find themselves in a situation where their debt burdens are once again unsustainable, even after full debt relief from the enhanced HIPC Initiative.[25]

Secondly, the human development approach to debt sustainability which was originally presented in 1998 by international development policy practitioners Northoever, Joyner, and Woodward argues that "most of the world's poorest countries have unsustainable debt and that countries with a large proportion of their population living in absolute poverty have a more urgent need to spend their resources on poverty reduction than on debt service" However, a more recent proposal advanced by Berlage, Cassimon, Dreze, and Reding in 2003 argues that the "primary needs of human development are not met in many poor developing countries, and that the HIPC Initiative is not sufficient to resolve the debt overhang of these countries."[26] The more recent human development approach advocated for the creation of, "a fifteen year programme targeted at implementing the MDGs while eliminating all of the outstanding debt for a set of forty-nine poor countries."[27]

Finally, UNCTAD argues that "a debt relief initiative that is premised on achieving the MDGs in all African HIPCs and other debt-distressed African countries, within the context of overall Official Development Assistance (ODA) flows to these countries, should be considered." UNCTAD additionally argues that,

> There is increasing recognition that a full debt write-off will make an important contribution to reaching the MDGs in the current group of HIPCs and other poor debt-distressed African countries. However, as has been argued in previous UNCTAD reports[28], even if all SSA's debt is written off, this would represent only half of the resource requirements for Africa's development in the next decade...The important benchmark for calculating the appropriate size of debt relief to be offered to this group of countries should be the level of resources that these countries need, taking into account the level of ODA flows, to attain the MDGs, without compromising (their) growth.[29]

In conclusion, UNTAD stated, "Africa's debt burden has been a major obstacle to the region's prospects for increased savings and investment, economic growth and poverty reduction (that) cannot be denied. There is now a consensus that a permanent solution to the external debt crisis,"[30] must be achieved.

Critiques

UNCTAD provides a thorough analysis and successfully argues that the HIPC initiative will not provide a permanent solution to ending the debt crisis in Africa and that only through focused international cooperation will debt sustainability in Africa be achieved. One of the most crucial arguments in this report that solidifies its message is the importance UNCTAD places on factoring domestic debt into debt sustainability strategies. Although the IMF and World Bank argue that "the implications of domestic debt for an appropriate forward-looking financial strategy must be judged on a case-by-case basis"[31], and others have argued, "against the inclusion of public domestic debt, (because) public domestic debt is small, data are rare and can be manipulated", and there are definitional problems regarding what exactly constitutes 'public domestic debt', its importance in debt alleviation and sustainability strategies can not be overlooked. Even though, in terms of dollar amounts, African countries' domestic

debt is smaller than their external debt, "its influence on fiscal debt sustainability could be great".[32] Domestic debt in African countries, "absorbs larger and increasing proportions of national budgets",[33] than that of external debt. Furthermore, domestic debt, "has broad implications for government budgets, macroeconomic stability, private sector investment and overall economic growth performance."[34] In contrast to a body of scholarly work, I believe that obtaining domestic debt figures for African countries is not an insurmountable challenge as the IMF maintains a database of this information.[35] The database like many is not perfect, but it would provide policy practitioners a more accurate estimate of the total indebtedness of African countries and would ultimately facilitate developing more effective debt sustainability strategies.

Despite UNCTAD's thorough analysis there are four instances when the report neglects to discuss essential aspects of debt sustainability including: (1) macroeconomic consequences, (2) growth strategies focusing on investment in infrastructure, (3) debt sustainability strategies for non-HIPC African countries, and (4) non-HIPC debt sustainability strategies.

First, the report does not fully explain nor acknowledge the macroeconomic consequences of failed debt sustainability strategies on GDP, economic growth and trade, current account balances, and foreign exchange activities. These consequences, which include producing an extremely volatile GDP and reducing world wide amounts of international trade and growth are extremely important factors when designing debt sustainability policy. If debt sustainability policies are designed without being cognizant of these issues they may be only effective for the short-term. They would ultimately fail in the long-term by creating a situation where African nations cannot sustain economic growth, which would make them unable to reduce or permanently sustain debt.

Secondly, in addition to the lack of discussion of macroeconomic consequences, the report neglects to address growth strategies that will lead to achieving debt sustainability in Africa. According to UNCTAD, growth "is critical for (obtaining) debt sustainability and poverty reduction."[36] Economic growth can be achieved by immediate increased investment in infrastructure developmental projects.[37] Increased investment and infrastructure have the ability to generate sustainable economic growth by providing jobs and injecting capital into capital scarce markets. Additionally, the creation of infrastructure will enable and better connect local and regional economic actors to the larger market of an African country or regional economy. Therefore, investment projects will have greater long term economic growth effects which will enable African countries to design macroeconomic policies

which focus on debt stability and adjustment.

Additionally, the report neglects to address possible debt alleviation strategies for achieving debt sustainability in non-HIPC African countries. Although the majority of Africa's poor countries are classified as HIPCs, there are several countries in Africa classified as LDCs including Angola, Cape Verde, and Lesotho, that are not considered HIPC countries because their debt is considered sustainable. These countries are not eligible for funding. Additionally, there are African countries such as Kenya and Nigeria, that are not LDCs, but have very high levels of debt and are not eligible for HIPC funding. These countries: Angola, Cape Verde, Kenya, Lesotho, and Nigeria, have high levels of debt which hinder their economic growth. As these countries are not eligible for HIPC funding the international community, including UNCTAD, must design and implement policies to help these countries address their debt sustainability challenges.

Finally, the report neglects to discuss other debt sustainability strategies in addition to those presented in the context of the HIPC initiative. Although the HIPC debt sustainability initiative has provided the definitive strategies over the past several years, they are not free of criticism as previously discussed, nor are they the only strategies present in debt sustainability literature. There are numerous other approaches and competing strategies to debt sustainability; including simplistic lender and borrower strategies and more complex initiatives[38] such as debt capacity and developmental targeting strategies.[39]

Debt capacity strategies seek to achieve financial sustainability through accounting and present value calculations; whereas developmental targeting strategies seek to achieve economic sustainability, "by investigating the links and relationships between fiscal deficits, interest rates, economic growth, inflation and balance of payments in order to solve the endogeneity of these variables and by taking into account the amount of resources needed by debtor countries to reach specific targets of growth and poverty reduction".[40]

Areas for Future Attention

Despite having provided thoughtful and thorough analysis, the debt and macroeconomic statistics UNCTAD utilized in *Economic Development in Africa: Debt Sustainability in Africa, Oasis or Mirage* were collected in 2002. Although seven years is not a tremendously long period of time, numerous economic, political, and social challenges have occurred in African nations, as well as in the world economy, which have impacted African debt levels and initiatives to achieve debt sustainability.[41] Therefore, new research which collects and analyzes more recent African debt levels must occur.

This future research should be a coordinated multilateral initiative

led primarily by UNCTAD and UNDP. While UNCTAD has the relevant external debt data that would facilitate the study of the macroeconomic indictors related to debt sustainability, UNDP has numerous valuable resources that would enrich this research. Due to UNDP's unique mission and organizational structure, UNDP has country or regional offices in many African HIPCs that are given the task of collecting human development data pertaining to political, social, and economic indicators, which may include indicators related to the domestic indebtedness of each country and region in Africa. The utilization of UNDP country offices' economic data collection will enable UNCTAD to generate more accurate debt statistics for African nations and ultimately design and implement policy strategies that are more realistic, sustainable, and permanent. In addition to its coordination efforts with UNDP, UNCTAD must initiate efforts with the IMF to obtain the greatly needed domestic debt data discussed in the last section.

In conclusion, detailed policy recommendations designed to achieve permanent debt sustainability cannot be rendered until new research studying current levels of African indebtedness is completed. However, it is necessary that these future recommendations contain a twofold strategy that addresses: first, the importance and necessity of international coordination to achieve debt sustainability and secondly as Dr. Sachs argued, the generation of investment, primarily in infrastructure development, which is essential to achieving economic growth, poverty reduction, and debt sustainability in Africa. Without the achievement of this twofold recommendation, Africa's debt will never become sustainable.

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Endnotes

1 The Report can be downloaded from the following website: http://www.unctad.org/Templates/WebFlyer.asp?intItemID=3246.
2 The definition was taken from the World Bank's Commonly Used Terms located at: http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTDEBTDEPT/0,,contentMDK:20268582~menuPK:576555~pagePK:64166689~piPK:64166646~theSitePK:469043,00.html#i5.
3 The United Nations Conference on Trade and Development's (UNCTAD) "Economic Development in Africa: Debt Sustainability in Africa, Oasis or Mirage," *The United Nations* (September 30, 2004), http://www.unctad.org/en/docs/gdsafrica20041_en.pdf, 17.
4 The author calculated this statistic, based on the fact that thirty-four of the

forty plus HIPC are African nations according to recent World Bank statistics.
5 UNCTAD, 5.
6 Ibid., 6.
7Ibid., 77.
8 The term "enabling environment" refers to the political, economic, and social environment that is present in a country which can instill confidence in investors. Ultimately a country that produces an enabling environment produces a business and economic environment where investors are confident that their investments will generate profits and will not face risks or be deterred by political conflict, risk, or economic uncertainty.
9 UNCTAD, 9.
10 Ibid.
11 Europe Aid is an office of the European Union. This, "office manages EU external aid programmes and ensures that development assistance is delivered worldwide". http://ec.europa.eu/europeaid/who/index_en.htm.
12 Jeffery Sachs, "The Transition to Sustainability" http://es.ibtimes.com/articles/20090331/transition-sustainability.htm (accessed April 19, 2009).
13 Ibid.
14 UNCTAD, 2.
15 IMF and World Bank, "The Challenge of Maintaining Long-Term External Debt Sustainability", Washington, DC, 20 April.
16 UNCTAD, 14.
17 Ibid., 4.
18 UNCTAD, 84.
19 Ibid., 30.
20Ibid., 63.
21 Ibid., 76.
22 Ibid.
23 Ibid., 71.
24 Ibid., 76.
25 Ibid., 65.
26Ibid., 66.
27 Ibid.
28 Ibid.
29 Ibid.
30 Ibid., 9.
31 Ibid., 40.
32 Ibid.
33 Ibid., 42-43.
34 Ibid., 5.
35 The IMF has access to data on domestic debt of all eligible HIPCs as part ofthe HIPC eligibility requirement. UNCTAD, 40.
36 Ibid., 21.
37 "UNCTAD had earlier cautioned that where there are trade-offs between public spending in priority and non-priority areas, these should be scrutinized from the view point of their overall impact on growth, and that in the African context, high and rising levels of public investment, particularly in infrastructure, are essential for moving into a sustained growth process." Ibid.
38 The more complex methods rely on advanced economic and econometric calculations, which are beyond the scope of this analysis.

39 It is important to make the distinction that although UNCTAD did discuss financial sustainability and targeting initiatives, it did so within the context of the HIPC initiative. There are numerous studies that present debt sustainability initiatives in the form of financial sustainability and targeting tools outside the realm of the HIPC initiative.
40 Marco Arnone, Luca Bandiera, and Andrea Filippo Presbitero, "External Debt Sustainability: Theory and Evidence", http://129.3.20.41/eps/if/papers/0512/0512007.pdf
41 The current world wide economic crisis has shifted priorities in international economics. Instead of trying to achieve sustainable levels of economic growth in developing countries, developed nations have attempted to stimulate growth in their own economies, and consequently may place furthering growth in developed nations as a lower economic priority. Thus the economic environment and attitude towards achieving African debt sustainability is very different today than it was seven years ago. Therefore, future research, which reflects changes in African debt new world wide economic priorities, relative to African debt sustainability strategies must be completed.

Interview with David Harris

Anika Patterson and Sarah L. Schirmer

David Harris is Deputy Provost and Vice Provost for social sciences at Cornell University. As Deputy Provost he focuses on a number of key provost office priorities, including diversity, admissions, and financial aid. From 2004 until 2007, he served as the Robert S. Harrison Executive Director of the newly established Institute for the Social Sciences (ISS). Harris holds a B.S. in human development and social policy and a P.h.D in sociology from Northwestern University. He has been a professor of sociology at Cornell University since 2003

Harris has broad research interests in race and ethnicity, social stratification, social identity, and public policy. His work applies theories from sociology, economics, and psychology to empirical studies of the fluidity of race, racial and ethnic disparities in socioeconomic status, and racial and nonracial determinants of white residential mobility. In addition to being published in academic journals, public policy outlets, and major national newspapers, he is the lead author of *Eliminating Racial Disparities in College Completion and Achievement: Current Initiatives, New Ideas, and Assessment*. He is also editor of *The Colors of Poverty: Why Racial and Ethnic Disparities Persist*, a volume in the National Poverty Center Series on Poverty and Public Policy. Shortly before our interview, Harris spoke about this most recent book at the Cornell University Africana Studies & Research Center, as a part of the Spring 2009 Black Authors/New Books Series.

The Current (TC): Please take us through the key points of your book [The Colors of Poverty] and the main takeaways you want your readers to have.

I think the core question of the book is simply, why is it that we have persistent racial disparities in poverty and poverty related outcomes. We know that we do, but I just felt, and my collaborators felt as well, that we didn't have a very good sense of why. There are at least two factors that make it difficult for us to get at a good understanding of the why. The first is that there had not been, we believe, sufficient interdisciplinarity in trying to get at it. Therefore, just as the explanations are complex, you also need a complex team to try and understand why there are persistent racial disparities in poverty. This came in part from the previous book put out by the National Poverty Center, *Understanding Poverty*; I had a brief piece in that book. Glenn Loury, the economist who is at BU now, commented that we are really not going to understand these things unless we get people who are the anthropologists and the psychologists and other kinds of folks in here because the people we have, basically

have certain paradigms, and we need a broader perspective. I was really inspired when I heard Glenn say that. I thought, he's right, that's what's wrong. His chapter talks about this a little bit. That was the inspiration for the book, it was a jumping off point where we said let's do that because we need to have a more interdisciplinary group with a range of perspectives. You need to have a group that comes at it not because they are poverty experts who might know about something else. Some of [*The Colors of Poverty's* contributors] are experts in the mechanism who might not know all that much about poverty, but when it comes to culture and some other things, they know a great deal.

The other issue is, I do not want to say this is necessarily what I have observed in the poverty literature, especially the National Poverty Center volumes, but I think certainly in the broader conversations we have, there is too much politics. So I found in my own research over the years that it is difficult for me to study racial inequality the same way a colleague might try to understand the importance of networks in management organizations. Because my topics are politicized and have political consequences, and as a result people ask a lot of questions about why you're asking certain questions and there can be lots of doubts about the answers if the answers are not consistent with expectations. That is not as true in some other areas where people do not feel as personally invested in it, and so what we tried to do here is say, let's just ask the questions. Let's really put it to the authors and say let's just go where it takes us, and if it turns out we cannot find any evidence of discrimination then we cannot find any evidence of discrimination, and let's just say it. Let's not go so far out there and say it's probably biology, because there's really not much evidence to show there is a biological difference. We don't have to pull everything someone could possibly throw out there, but let's just make sure we're covering the landscape and not constraining ourselves to explanations that are about the individual or explanations that are about the society and the structure, which is what we might be expected to do given that we are a bunch of left-wing academics. So that's the background.

TC: It is very overwhelming to hear, as you said in your lecture, that policy or changes in one mechanism of poverty isn't going to make much difference; rather that the health care, the education, the housing laws, the sentencing laws – they all need to be changed to truly create a sustainable reduction in poverty. As policy students, how do we continue to believe that we can make a difference?

You are a student at Cornell, and I do not know anything about your background, does not matter, but that's a position of privilege. Most people are not able to do what you are doing. And what are all the things that allowed you to be here? And it's not one thing. And it's not even

things that you're cognizant of often. And so that leads you to think that if there is a whole system of things that explain why some people get to places like this, it's hard to believe that you could think about just one of those factors and break the cycle for others. I understand that it can seem overwhelming, that oh my god that's too many things to change, can't we just focus on a couple? And it is the case that some factors can be more important that others, but I think you could take a medical analogy. When someone is in bad health, it's a complex system. In public health, you look at where they live, you see that their allergies and asthma are aggravated because they're in a place with carpet and there are animals there, and they live near a factory; and they don't exercise, and have a poor diet. You have to think about the system. And my argument is it's the same thing when it comes to poverty.

One of the best examples of this is the book *Poor Support* by David Ellwood, which is basically the game plan for welfare reform. What is so powerful about this book is that Ellwood talks about a system and he's not talking about everything but he's saying if you want to understand why some people are caught in a cycle of welfare and public assistance, and you want to break that, it's not as simple as well, they're lazy or well, they don't have any job opportunities or skills. It's a system and so you've got to think about motivation. He says you also have to think about constraints, you have to think about childcare, you need to think about the supply of jobs that pay a livable wage, you need to increase the minimum wage and also you need to have government jobs of last resort. If someone is out there and saying I really want to work, I found the childcare, I've worked and taken some classes and I now have some clerical skills, there just aren't any jobs, then there's something called a job of last resort and they *can* work as opposed to holding the person responsible for the fact that there aren't jobs out there.

The point I'm making is there is a systems approach, and what we're saying is you also need to take a systems approach to poverty more broadly, not just to welfare reform. The danger is that, and your colleagues who have taken courses in poverty research and welfare reform will know, have you heard about the jobs of last resort? Well, we did not do it. The big increase in minimum wage? Well, we did not do it. There are a couple of these things we did not do. The problem is the more punitive aspects made it through Congress. But a lot of these other safety net aspects did not. The challenge is how do we get people to understand that: a) we need a system, and b) for legislators and others to actually buy into the system as a package instead of stripping off those things that they don't like or they don't think will be popular with their constituents, and then moving forward with the rest. That's that analogy about the pebbles. You just built half the dam and you're surprised the water is still flowing.

How can I have a big impact on policy? I think the way I can have a big impact on policy is by doing things like this book, but especially by teaching students. My hope is that there are more students from our Inequality Concentration for undergraduates who are going to end up as PTA presidents and lawyers and salesman and everything else who just know a little bit more. And so when this comes up, they have a better foundation to say, "You know what, jobs of last resort is actually a good idea." Instead of, "I don't know anything about this and my kneejerk is those people should be able to go out and get jobs. There are plenty of jobs, they are lazy." So I think that would put more pressure on legislators and others to say, "We should do this." As opposed to right now when you have less of that pressure, so [legislators] tend to strip out the things that are [social] supports. So I think that is why it has got to be an approach that comes from the top but also from the bottom.

TC: One thing that was really interesting [in yesterday's talk] is the concept of moving beyond race neutral policy and moving into a territory where we have polices that confront race. How do we keep from crossing the barrier into policies that appear racist? How do we confront race without crossing that boundary?

I think we need policies that are race aware. The Supreme Court is now considering this case of, effectively, reverse discrimination involving firefighters in New England. [Justice] Roberts was quoted as saying, "The way to get beyond race is to stop having policies that focus on it." I think that is just wrong. I think you don't want to assume certain things. But I think if you hire some social scientist and try to really understand what is going on, you try to really understand where race is playing a role. I think you have to design polices that, like anything else, address the impediments that certain people have, the barriers that are there for people. If we find that, ceteris paribus, two equal candidates come along and ninety percent of the time the firm chooses the white guy, then it sounds to me like you might need something so that when they are about equal, we expect them to be chosen approximately equally. You don't need a policy that only focuses on race; you need a race aware policy that is smart enough to understand where race or gender or whatever factor it is might matter, and then, for example says, "Well we want to let the state do whatever they do, but if it turns out that states with particularly large minority populations are heavy on the punitive aspects of welfare reform, and other states aren't then maybe HHS [Health and Human Services] ought to say something about this." HHS should say, "No I'm sorry you guys can't do that because that is going to disadvantage a population that has been historically disadvantaged, and we don't want to perpetuate that." This is a race aware policy as opposed to a policy that is only focused on race.

TC: Are you looking beyond affirmative action then?

Think about an example from the Wheelock chapter that talked about the composition of jury pools. This is something where you might want to be race aware. You are not only focused on race, but you are not ignoring it. You are trying to be smart about it and say, "Is it a problem that within the state of Georgia there are a bunch of counties where more than fifty percent of black men cannot be on a jury [as a result of disenfranchisement due to prior incarceration]?" We have a disproportionate number of black men coming up for trial and we have evidence that the racial composition of jury pools might matter. Therefore, that seems like that is not exactly giving people a fair trial. That is a race aware policy.

The problem is, our society has a really hard time with race. [People in society] are busy worrying about, "Is someone calling me a racist or is someone saying race does not matter?" What I am talking about is a sweet spot that is somewhere between - ignore race completely and race is everywhere. Hopefully we are moving closer to that.

TC: What do legislators need to know in order to create policy that reduces poverty in a sustainable way? What should the relationship and partnership between researchers and policy analysts look like in order to help legislators create policy?

The National Poverty Center is a very good example. The idea is that [the Center] will do research like the book that we produced, but also will be on call as an expert that will periodically get asked by [HHS] for advice on things. There are also people who are full-time researchers and since it is housed at the Ford School of Public Policy, students get involved as well. I think it is excellent because you expect for there to be a lot of knowledge among academics, and there may not be as much in-depth [knowledge] in the federal government, and so it is good to have this type of partnership.

It is amazing when you think about the fact that they gave us the National Poverty Center and this book was one of two or three things that we said we were going to do. We had the site visit and I had my own stereotypes. There was a guy who was a Bush political appointee who came in and I thought there is no way they are gong to let me do this especially because I am telling them I am nonpartisan and I am really going after everything on race and I might find discrimination. At the end of this meeting, the guy says, "You might get me in an awful lot of trouble, but I think this is really important." And so they did it and so I thought that was great. It shows that there can be a partnership even when what we are saying is not politically consistent with what they are thinking about doing. So I think the partnership is critical.

I really think social science is a huge part of policy. Anything that policy students and policy analysts can do to make it clear to folks that there are differences of opinion among social scientist and experts, but some people have more expertise than others. On some things, there is an answer that 90 percent of the people who are really experts will give. Yes, you can find people from the Center for We're Smarter Than You to say something else. I have seen examples of people just discounting everything. One of the examples I know best is around the question of racial composition and how we ask the race question. I have done some work on this. Basically it is an example of too many statisticians and advocates, and too few social scientists because the social science research is not at all consistent with what [the Census Bureau] did. But there are certain statistical properties that you meet by certain things and there are advocates who are pushing very hard and saying, "I am with group X and I think it is important for group X to get to respond with certain categories." This is odd. When you think about it, no one asks poor people how to measure poverty. We should be impartial, objective, and clear about how decisions are based on evidence, as opposed to politics. Find a way to communicate that to people who are in decision-making positions and I think everyone will be better off.

TC: Do you think when we focus on the problems and challenges that minorities in poverty face that we reinforce the stereotypes and create a hostile environment that expects these individuals to fail and remain in poverty?

There is this thing called stereotype threat, and what you just said is a part of it. When you are a minority person and your group is not supposed to do well and we activate your identity, then you don't do as well because you are trying really hard to bust that stereotype. So the suggestion is that you want to find ways to conduct education in ways that don't unduly activate identity concerns. I think about this around Cornell. With undergraduates we see a difference in graduation rates and a difference in indicators of excellence, for example, the Dean's List. The conversation is just as you described. If we talk about this, will it make Cornell a much more hostile place for minority students and so forth. I have two general responses to this: one is that it is hard to solve the problem if we won't acknowledge the problem, and it is kind of hard to acknowledge it covertly and design programs because it is kind of hard to justify why you are creating those programs. The other issue [is demonstrated in a situation] where two minority students I was talking to about different things said, "We are really concerned about the differences in graduation and achievement rates at Cornell, and we want to know if the administration knows it and is doing anything about it." People are smart. If your group tends to get the short end of the stick or tends to underperform, you often know it. It would be

a different world if black students at Cornell had no idea and thought black students' graduation and achievement rates were comparable to white students, then saying something about race might make people say, oh I am not good and so forth. But, we live in a society where people are already aware of expectations and stereotypes. I actually believe that you gain nothing by avoiding the topic and you lose everything, you lose your ability to fight it. I think it ought to be an iterative process where you implement policy and you see how it is going. And when you see that you are getting below some threshold, then you ease off of it.

Just as I think you want to talk about race, you also want to show it is not a simple race story. Gender matters, class matters, social networks matter, residential opportunity, and spatial distribution of resources; all these things matter. Otherwise you are telling a story that is wooden, and which says your only identity is your race and all we need to worry about is your race. I've seen this frustrate people, including me, who say I am a little more complicated than that. Race is not all that matters.

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Interview with Tina Nilsen-Hodges

Paula E. Reichel

Tina Nilsen-Hodges is the founder and principal of New Roots Charter School, a public high school dedicated to sustainability education and social justice opening in Fall 2009 in Ithaca, New York. A teacher and curriculum developer for small, progressive schools for nearly two decades, Nilsen-Hodges taught sustainability education courses at Ithaca College and served on the leadership team for Partnerships in Sustainability Education, a joint venture between Ithaca College and EcoVillage at Ithaca.

The Current (TC): What is New Roots Charter School?

New Roots Charter School will be a ninth through twelfth grade program, which will enroll approximately 225 students. It is a secondary program designed for sustainability education, so we are drawing upon best practices in sustainability education, educational equity and supporting all students to reach high levels of engagement and achievement. New Roots is centered on the concept that people who receive support, who are actively engaged and given the opportunity to develop their talents in school are the people who will best be able to take on the challenges posed by a changing economy and ecological system.

TC: What is sustainability education and how does a sustainable curriculum differ from that of a typical public school?

Sustainability education is not just about content, but also a way of orienting curriculum and practice. Taking it from that angle, we will have to emphasize active, place-based, project-oriented learning – applying academic learning in the classroom to understand and solve problems in the wider community. In creating integrated projects, students will develop an interdisciplinary understanding of community problems and an understanding of ways that academic disciplines relate to each other and a general orientation to inquiry and problem solving. This suggests a different kind of classroom structure, a much different structure than the schedule and lecture format of more traditional learning environments. We will also emphasize building teamwork skills. How do you work with other people to identify and solve problems while drawing on your academic learning? This is an essential life skill that will support our young peoples' capacity to take leadership roles in our community's transition to greater sustainability.

Another focus of sustainability education is systems thinking - thinking in terms of how each of the parts relate to the whole - whether that is an interdisciplinary understanding of curriculum or understanding how things work within disciplines.

TC: Tell me about the Farm to School Meals Program and why is it integral to the New Roots concept.

The Farm to School Meals Program will connect our students with the local farms that provide food for our school meal program. Dr. Jennifer Wilkins of Cornell University and Groundswell Center for Local Food and Farming are collaborating with us to develop a program that we hope will be a model for other schools across the state.

I have seen that food is one of the best ways for people to fully experience their intimate connection with the larger ecosystems. So much in our culture divorces us from understanding this essential connection. Think about the 24/7 supermarkets where you can walk in at any time of the year and buy the same food products. You can buy food products that sit on your shelf for two years and taste the same as they did when you put them there. We just live in times that are unlike any other in human history, where we have lost our sense of connection to the cycles of seasons and to the soil beneath our feet.

Food helps us to reconnect and provide us with an understanding of our place within larger earth systems. There is also a kind of joy and pleasure and community dimension to that as well. When people work together on farms on a sunny day, actually planting or harvesting something; having conversations with other people that are also at work; preparing food together; eating fresh, healthy, local food, the purchase of which directly supports local farmers, helps to reconnect people back into both community systems as well as ecological systems, on a daily basis. The New Roots Farm to School Program will provide students with opportunities to make these connections, and to link academic learning to these experiences.

TC: Describe the relationship between New Roots and the organizations State Environment and Education Roundtable (SEER) and Expeditionary Learning Schools.

Our New Roots Charter School program and vision was developed before we connected with these national partners. But we soon realized the affinities between our initiatives and what they have to offer in terms of supporting our faculty and building our capacity to make these programs work. Both of these organizations provide professional development and coaching, so they will engage with us in thinking about our curriculum and staff development. In the case of Expeditionary Learning, they have school designers that will come to our site and work directly with teachers.

One of the things that attracted us to working with these partners is their high degrees of success with all learners, particularly those who underperform in traditional settings. They not only include students with special needs, but also students from a variety of ethnic and class backgrounds, races, so on and so forth.

TC: How will New Roots Charter School prepare students to enter college or the workforce?

The best preparation is a school environment that, first of all, acknowledges that students come in with different gifts and needs and seeks to create a structure that provides each and every student with opportunities to shine. The school environment should also provide support which is non-judgmental, in areas where students may require more assistance. Our students will take all the regents and state exams that other teens take, and our program will focus on helping them successful meet these challenges. We also have a partnership with Tompkins Cortland Community College [TC3]. By the time our students get into their junior and senior year, we will be looking to develop required courses that are vetted as concurrent enrollment courses, so students will receive college credit and meet college-level standards in those courses. We think this will be excellent preparation for their transition into college should they choose to go in that direction. They will also have access to TC3 courses and electives their senior year, which will again give them more experience with college.

At the same time, we will also be providing a lot of opportunities for internships, community service, and student-run businesses that will provide students with a variety of hands on community engagement experience that will help them recognize their talents and skills and put them to use on behalf of the community, and start to see what kind of work they might want to do, whether it is work that they need to get a college degree for or not.

As a SUNY [State University of New York] authorized charter school, part of our mission is to make sure each and every student is prepared for college, but we also want to make sure that they are prepared to do whatever it is that they like to do as a next step after high school.

TC: What is your hope for New Roots graduates?

My hope for New Roots graduates is that they can face challenges that are emerging now with hope and optimism. That they can take up leadership in their communities to re-envision how we can make a good life for ourselves, while responding to the fact that there may be changes in things that we thought were part of the good life in the past.

Our greatest gift could be instilling a sense of common purpose, a sense of feeling confident and prepared, of being in this together, being able to work with other people towards mutual goals, being able to work

with each other across differences, having respectful relationships - just moving forward with joy and purpose into their adult lives and helping to turn the tide towards a more just and sustainable future.

TC: Why locate in Ithaca? Do you think your sustainability education model could be applied in other locations?

Why Ithaca? Well, we live in Ithaca! This is really a home grown school. There are educators and parents from Ithaca that have grown this school. The school is growing out of decades worth of work that others have done to bring sustainability initiatives to fruition in this area - "sustainability initiatives" writ largely, meaning that we also have social and economic initiatives here in addition to the ones that are more focused on the environment. Ithaca College, Cornell University, and Tompkins Cortland Community College are tremendous resources for all aspects of our program. Ithaca is the perfect place to grow New Roots.

Ithaca has been a tremendous resource for us in building a model that we hope can be applied across the state and across the nation. That's why we designed the program specifically to address all the twenty-eight learning standards, to enable the students to pass Regents exams, to meet enough of the conventional high school requirements so that other public high schools will see it as conceivable to adopt our curriculum and practices.

TC: What type of opposition has New Roots encountered?

The primary opposition that we have faced arises from misunderstandings about charter schools, and distress about what changes might be necessary in the Ithaca City School District as a result of our school opening.

This is the first charter school in this area of New York State and so what we realize is that people do not understand what charter schools are. People have not been well-informed and base their opinions on charter schools that opened a decade ago, which were often started by education management organizations in large urban areas. These organizations came into failing school districts and set up what some saw as and what may have been, for-profit school centers using public funding. So it is understandable that there is a lack of information about what charter schools actually are - just public schools of choice. It is unfortunate that the way the charter schools law is written it puts charter schools into a relationship with local school districts that can be uncomfortable. The funding for the school literally comes out of the pool of money that the school district has gathered for educating their students.

Now the good news is that they only need to spend sixty to eighty percent of the per pupil allocation for each student that comes to New

Roots Charter School. But since they have fewer students, it does require changes in the ways that they are offering programs and how they are spending money.

It is completely understandable in these times of high economic uncertainty that people would be afraid of that impact. The reality is that the maximum impact will only be 1.5 percent of the total budget in the first year. It is likely to be far lower than that because of the combination of additional state aid as well as the savings associated with educating fewer students. I think everybody will feel better when we get to a place where people actually see that there has not been a huge negative impact on the district.

TC: Have you faced criticism over the concept of sustainability education?

There is a lot of confusion about what sustainability education is and that has actually been a barrier for us in helping people understand why this school and why offering additional choices for kids in Ithaca that might better support their growth and development during high school is necessary at this time. So, if people think that sustainability means recycling and composting on a regular basis or if they think that sustainability means adding an environmental studies course, it is understandable why they do not see that sustainability education is really about transforming our relationship to the world.

Coming from an environmental standpoint, Dr. David Orr has said that all education is environmental education. We learn about our relationship to the world through the ways that we interact with curriculum and one another at our schools. So, in order to really transform our relationship to what we call the environment and to one another, we need to take a hard look at everything that we do in schools. And making that kind of shift all at once is not something that a large, well-established institution is really in a position to do.

TC: How do you believe the green/sustainable charter school movement will influence the curriculum, structure, or practices of traditional public schools?

We hope that it will have a tremendous impact. Right now, the fact that our economy is undergoing some rapid changes is bound to get the attention of people on a broader scale and make people recognize that we need to start thinking differently about education. So, we are really working hard to get ahead of the curve so we can be a resource as part of that rethinking process.

It is certainly helpful that President Barack Obama is leading the way with bold initiatives that support innovations like ours. We have not seen any direct funding or support at this point, but it is nice to know that we are at the forefront of what is emerging nationally.

TC: You recently attended a conference for the Environmental Charter School network. What did you learn about the progress of the school-based sustainability movement across the country?

It is a really exciting time. That is a new network that really acknowledges how many of these kinds of schools and school programs are, forgive my metaphor, sprouting up all over the country! Although, I think that what we also learned is that our school is really at the cutting edge, not just being a green school or a school that offers opportunities to learn more about the environment or spend more time outdoors, but to really be thinking in terms of sustainability and systems-thinking and applying the definition of sustainability the United Nations uses to redesigning the entire curriculum.

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Interview with Ignacio Armillas

Daniela Ochoa Gonzalez

Dr. Ignacio Armillas has twenty-five years of professional experience working with the United Nations on projects related to post-disaster rehabilitation, housing, and the environmental effects of urbanization, all within the context of developing countries. His work has centered on managing the implementation of physical development projects by coordinating the work of social, economic, and environmental specialists as well as high-level government officials and project donors. He holds a Ph.D. in urban and regional planning and development from Columbia University and a Masters degree in housing, urban, and regional planning from Cornell University.

Dr. Armillas has been a visiting scholar at the Cornell Institute for Public Affairs since 2006. While at CIPA he has been a treasured advisor, sharing his experiences through formal and informal presentations, student advising sessions, and Mesa Hispana.

The Current (TC): Looking back how did your early life experiences shape your career and thinking about the world?

Perhaps there were three aspects in my early life that predisposed the way I would go. One was that by the time I was graduating from high school I had already lived in three quite different countries, Mexico, the U.S., and Ecuador. This gave me a bit of a different perspective on the world.

The other was that my father was an archeologist so as a child I spent much time accompanying him on field trips, all along listening to him, his colleagues, and students talk about their work. I could not help but become aware of "man's role in changing the face of the earth." Actually this last phrase is the title of a great book edited by William Thomas published in the mid-fifties, before these concerns became encapsulated into what we now refer to as the environmental movement. The movement really dates to the early sixties with the publication of Rachel Carson's *Silent Spring*. In fact, this was the third influence in my early life. The Carson book was published the year I entered university so that the emergence of the environmental movement and my professional formation are more or less concurrent.

Although I was not aware of the influence of these factors at the time I think that they predisposed me for the career path I followed.

TC: How has your thinking changed, especially in terms of environmental issues?

I cannot say that my thinking has changed; it has definitely expanded, intensified, and matured. I have come to understand the global ecosystem and humankinds place in it to be as complex and intricate as that described by authors such as James Lovelock. Perhaps initially we saw ourselves as lording over our environment, somehow as separate entities, much like a gardener and his garden. We tended the garden and if we took care of it we got to harvest lots of vegetables; but we were not part of it. Now I understand humankind to be an integral part of the whole.

TC: In your education period, who or what inspired you the most or developed your curiosity?

My undergraduate studies were in a design school under the best-described designer/philosopher R. Buckminster Fuller who is better known for his development and promotion of tensegrity or geodesic structures. Fuller understood design as a systematic process that should be utilized to solve problems for humanity. He was mostly interested in technological solutions and not at all in form per se. So we were encouraged not so much to create form and pursue "higher" aesthetics as we were to do sound problem solving. Fuller also had a life-long concern about efficient use of resources and how we managed "spaceship earth", a term I believe he coined. My time at that school coincided with a period in which Fuller had a team working on a research project called "The World Resource Inventory". The idea was to understand what resources the world has and how they are distributed in order to use them more efficiently in attending the needs of all humanity. Inevitably his interest in this subject permeated the thinking in the school and influenced all of us. His project director, John McHale, for whom I worked a short time, went on to publish books on the subject.

Somehow this journey led me to become interested in cities, those large and complex constructs created by humankind and which become our immediate environment. I became intensely curious as to how these constructs formed and developed, what made them tic, their metabolism, and their relationship with the broader environment.

I had several other great professors who influenced my thinking, among them the anthropologist Conrad M. Arensberg – perhaps the best mind I have ever encountered; the urban economist Chester Rapkin, who really understood what makes cities tic; the economist Barbara Ward author of *Only One World*, one of the pioneers of development and environment; and John Reps, right here at Cornell, whose outstanding lectures and books confirmed my passion for cities.

TC: What have been the more exciting events of your career?

Having spent most of my professional life involved in development operations I have had little opportunity to do much research. Of the research I have done there have been three main areas. My Ph.D. dissertation was on the origins and development of urbanism in ancient Mexico, that is Mexico before the European conquest. As you can see this subject combined my interests in cities and archaeology.

In the late 80's I was Director of a two-year UN sponsored research project on seismicity in the Valley of Mexico. The findings of the research were used to revise zoning, and building controls and regulations. This project design was later replicated for northern Iran, another highly seismic area, but I was not part of the team in that instance.

In recent years I have been involved in a project surveying what remains of an ancient agricultural practice on wetlands in the southern part of the Valley of Mexico. This particular form of agriculture is highly productive and in fact this wetland area supplied most of the fruits and vegetables (and flowers) consumed by Mexico City since its origins, more than seven hundred years ago, until recent decades. Urban expansion is now obliterating the wetlands. The results of this work will be published in book form later this year.

I am also interested in water, more specifically policy issues related to water and cities. However, I have yet to publish anything on this subject.

TC: How did you become interested in public policy?

Initially public policy was one of the many aspects of my interest in cities but as I got deeper into development work with the UN I came to appreciate the importance of policy on the overall development process. Time and again I was seeing examples all over the world of poorly conceived policies leading to undesirable outcomes and wasted resources; and in some instances having detrimental effects. I came to appreciate that since policy sets the overall parameters for action, how a policy is conceived and designed very much influences the solution. In short, this is how I became involved with public policy.

TC: Among the different countries you have lived in what do you think is the main difference regarding the adoption of environmental policy?

If the question is with regards to governments I believe that the main underlying factor driving policy makers everywhere with regards to environmental issues are short-term economic concerns.

I would like to add that attitudes towards the environment are not always apparent or easy to discern. In poor countries we see the deforestation of areas around villages and even cities as the population

scavenges for firewood for cooking and even heating in some cases. Other local resources such as water may also be overexploited out of sheer need. Open spaces as well as ponds, lakes, and rivers are polluted by human waste, garbage, and waste from some of their economic activities such as butchering of animals, all for lack of proper urban services. Industries, both local and foreign, pollute rather unchecked for lack of proper legislation. The air in cities is fowl with industrial emissions and emissions from vehicles most of which are old and burn poor quality fuel. All this is the result not so much of disregard for the environment as it is a manifestation of poverty. Nonetheless, it is very visible and we may see it as an indication that they have no regard for the environment. But actually, the "ecological footprint", the impact on the overall global ecosystem, of a person in a poor country is far, far smaller than that of individuals in wealthier ones.

On the other hand, the environmental degradation caused by people in rich countries, particularly as result of their consumption patterns, is not so visibly obvious. Just think that much of the industry related pollution we find in developing countries is the result of consumption patterns in the developed ones. In developed countries, although there are better pollution controls on industry and more apparent concern for environmental issues, there is little appetite for reducing consumption patterns and lifestyles that are the factors that are having significant impact on the global ecosystem. So I would say that there is a greater disregard for the global environment in developed countries simply because of their consumption patterns. In my view not only are many people in the wealthier countries living beyond their means, most are living well beyond their needs.

TC: Donella Meadows said that "ongoing growth" was the mantra of a society in overshoot as opposed to the mantra of a sustainable culture being "higher quality of life." How would you define sustainable development?

I believe that the definition provided by the Brundtland Commission is adequate but perhaps, of necessity, a bit too vague and limited. I say of necessity because definitions and decisions adopted by intergovernmental bodies usually must meet the lowest common denominator in order to be accepted by all. No doubt each of us would probably like to add hers or his own embellishment to this definition. For one, I would like to see something about meeting the needs in a more egalitarian manner. Nonetheless, I particularly like the emphasis on the concept of meeting needs instead of growth.

Since you brought up Meadows specifically I would like to mention that I do not believe that we can significantly improve the living conditions of the world's population that live in poverty without some degree of redistribution from the haves to the have-nots. My thinking

on this issue is pretty much based on the limits of growth concept. The one planet that we live on has limited resources and at the present time only a minority of the world population enjoys a decent level of existence - I say a minority since what the exact proportion is depends on the definition of decent – and we are already straining many of those ecosystems to their limits. If we are to improve the living conditions of the many in poverty we must increase the total wealth of the planet, redistribute existing wealth, or a combination of both. But that additional wealth has to be produced without increasing the strain on the planet and that is the challenge.

Some will argue that we can increase the overall wealth of the world through increased efficiencies in how we use resources and through new inventions and innovation. It is true that have done just that over the past one or two centuries. In fact the increase has been phenomenal. And no doubt we can wring some further growth through this means and through better management of the environment. But by how much and is it sustainable? That is what the "Limits of Growth" concept is all about.

TC: In your opinion, what is the biggest global challenge in terms of sustainability as far as natural resources are concerned?

In terms of natural resources I believe that the greatest challenge to sustainability is the availability of fresh water. Keep in mind that fresh water is essential for survival. There has always been a close relationship between water resources and civilization from the earliest of times. Historians such as Karl Wittfogel have elaborated amply on this subject. This dependency on fresh water is no less true today; the ability of a society to sustain itself depends on the availability of fresh water. We require fresh water for far more that health and hygiene, water is indispensable to grow our food and run our industries and cities. In fact, there are few human endeavors that do not require fresh water.

Looking at our planet from afar it would appear that availability of fresh water is not that big a problem, after all the greater part of the surface of the Earth is covered by water. But only 2.5 percent of all the water on the planet is fresh water, and of that small amount about seventy percent is locked up in glaciers and practically all the rest is in the ground or in living organisms and is not easily accessible. All told less than one percent of the fresh water on earth is easily accessible for human use. And to make matters even more difficult, the fresh water that exists is unevenly distributed on the surface with large concentrations in areas not all that suitable for human habitation or agriculture, such as extreme northern latitudes. However, up to now, that small amount that is easily acessible has been more or less sufficient for humankind

to thrive on, at least in some areas. But the increase in population and industrialization has brought us to a point where we are using up most of the easily accessible fresh water, and many parts of the planet are already experiencing water stress.

To increase the amount of fresh water available is not an easy task. Means of obtaining significant additional quantities of fresh water, be it through tapping rather inaccessible ground water sources or through desalination, require considerable amounts of energy and capital. Moreover, the transportation of water from source to where it is needed also requires energy and capital. So the cost of the resulting fresh water will be high.

I will not go on with this point; there are plenty of good sources in the literature that elaborate on the arguments I have made. Cary Wolinsky's article titled "Big Squeeze" which appeared in the July 2008 issue of *Scientific American* summarizes this issue well**.** Enough to say that the implications of water scarcity to development are clear. I believe that the water issue will permeate [pardon the pun] many of your careers regardless of whether it is in the public or private sectors, in the U.S. or international.

TC: How did you become interested in water policy? What experiences have shaped your thinking in this area?

I became interested in water issues through my work with cities. In trying to improve living conditions in cities I was often dealing with water issues. Be it the provision of water for human consumption or sanitation purposes. I became aware of the daily struggle obtaining water was particularly for the poor. Obtaining water usually means long walks to fetch it, high prices to buy it, poor hygiene and disease from drinking contaminated water. Providing clean water is essential to the improvement of living conditions in cities, but its availability is increasingly problematic. Time and again I saw how difficult it is to provide the fastest growing cities of the world with water. Adequate sources are becoming more and more distant, and then there is competition with other uses such as agriculture and industry. In many parts of the world there just is not enough water available leading to overexploitation which results in environmental degradation.

TC: How can policy professionals best contribute to potential solutions to mitigate this challenge?

By formulating good policies. In terms of policies to address the issue of water we should, first of all, seek to work at the appropriate scale. I believe that the most appropriate scale is that of the hydrological basin as a unit. But to work at this scale is usually quite difficult because of political demarcations and multiple levels of government. Working through a basin wide authority with clout is the only hope. Whenever

possible we should also try to be anticipatory, that is act ahead of the problem and not wait until the crisis is upon us.

Regardless of the time pressure we must not simply jump to an obvious solution. How often have you heard "We face a water shortage in the city, therefore we must tap another source or increase exploitation of the source we are already exploiting." This kind of knee jerk approach to policymaking often leads to many unhappy returns and never solves the problem in the long run. To me this is not policymaking, it is simply reacting.

To really formulate sound water policy you must take time and resources to analyze the entire water use cycle from sources and quantities of water available; to collection methods; to treatment and distribution; assess real needs and types of uses; and finally to disposal of the water. Study each part of the cycle; see what options there are to improve efficiency and/or lower demand. More than likely there will be a whole range of policy actions that can be taken to improve every part of the cycle. Some may rely on technological approaches, others will imply modification of behavior, and others may be economic.

Once you have the range of actions for each part or stage of the water use cycle you can evaluate each option, selecting the most viable or desirable ones and assembling them in coherent sets of programs that work together. The resulting water policy will be comprehensive and sustainable.

TC: Population growth seems to be an uncomfortable but important issue no one wants to really touch in the political arena. Ironically, some governments actually pay their citizens to maintain or even boost "their race/nation" population rates. What is your opinion about this?

There is no doubt that population growth is at the root or exacerbates most problems we face today. So it seems anachronistic to promote higher birth rates, yet some countries, as you mentioned, are doing just that. A small number of them are doing it for purely nationalistic reasons; but in others the driving force is economic. In the later instance these countries find that as a result of having lowered their birth rates and lengthened life spans there are simply not enough working-age people to support the portion that is no longer economically active. As a result they encourage their citizens to have more children. All the while, there is an excess of willing labor idle in other countries. A prime example of how international borders mitigate against the rational management of our planet and why migration policies should be rethought.

TC: It seems likely that we will have to support high-density demographics. Do you see any advantages for urban density?

Lets talk about density and size. First, human beings concentrate in settlements for the many advantages that concentration represents. Most human enterprises benefit from, indeed require, some degree of density of settlement. Factories benefit from having their workers living close by, so do government offices and universities and even artistic and other cultural pursuits. So density per se is not a problem, the issue really is: is there an ideal size and density for cities? The urban planning literature of the twentieth century is full of studies and debates on this subject. However, no consensus on this issue has ever been arrived at. So we are left appreciating the fact that size and density have benefits but not certain as to how large and how dense.

Another factor to consider in thinking about size and densities is the prevailing stage of development and to a lesser degree culture. Today's technology allows for rather large urbanized areas to function relatively well in the more advanced economies. Similar size metropolitan areas in poor countries where those technologies are not as prevalent or do not work as well can simply not function and are chaotic. Unfortunately it is precisely in the less developed countries where we expect to see practically the totality of urban growth take place in the coming decades. This growth will be explosive. Under such circumstance no, I do not see any advantages to further growth of existing megacities. But I am afraid that it is a reality we must confront and learn to manage.

TC: Based on your experience with the U.N, what is the best strategy for poverty alleviation? In fighting poverty people's lifestyles tend to also be impacted, how can we try to solve one issue without affecting the other?

The answer to the first part is that, from my experience, the best strategy for poverty alleviation is to provide people with knowhow and tools, and to support their efforts by formulating appropriate policies and providing required institutional frameworks. I emphasize, provide knowhow, tools and support, and let them do their own thing; development agents should be just that - agents, facilitators.

And yes, development by definition will change lifestyles. But if the development efforts have been along the lines I just mentioned, where they are conceived and directed by the recipient or beneficiary and the development agents have acted only as facilitators, change will be along the lines of what the object population needs and wants. So the question is not so much can development avoid affecting their lifestyle – which it will - but is the change along the lines of what the beneficiary population aspires to and are they OK with the changes development will bring about. The tradeoff decision is ultimately theirs.

TC: In your opinion, what is Environmental Global Governance? How far have we progressed toward that goal and is it environmentally sustainable?

I understand "global governance" to be the worldwide collective process, through multilateral mechanisms, to identify and address problems that reach beyond national boundaries or are beyond the capacity of individual states to solve. Most environmental issues, by their nature and scope, go beyond national boundaries and can only be properly addressed through multilateral action.

Such multilateral mechanisms exist, principally the United Nations through several of its entities such as the United Nations Environmental Program (UNEP). Already a whole host of conventions, protocols, and treaties have been worked out and made operational. Just under the aegis of UNEP alone we have a long list of such agreements in a wide variety of environmental subjects. There are treaties regarding a number of atmospheric issues such as ozone depletion; many regarding biodiversity, chemicals and wastes, the oceans and other water bodies, and land issues such as desertification. Then we have those on protection of endangered species, and so on. A better known one is of course the Kyoto Protocol.

To varying degrees these treaties are working. We have greatly reduced the use of ozone depleting gases worldwide, for example. "global governance" mechanisms already exist and have demonstrated some effectiveness in chipping away at concrete problems. In my view these mechanisms should be strengthened and used more widely since they are the only way to address environmental problems.

TC: What do you think will happen with the Kyoto Protocol? What is your opinion about China's argument to have a right to pollute in order to develop?

My own sense is that there is an increasing political will to go into the next stage. But remember what I said about decisions adopted by intergovernmental bodies. I am afraid that the outcome will still be tame and possibly more convoluted. At any rate this protocol is only a part of what needs to be done to address global warming. We need to work on many levels and on many fronts.

Concerning China's position I believe that there is some merit to it, they have a right to improve the living standards of their population. However, since the last thing we need is more pollution I favor all reduction of greenhouse gases. Perhaps a just approach would be to establish some sort of compensation from industrialized countries to offset costs of controlling emissions in developing countries. Present-day industrialized nations have created the conditions leading to global warming in the course of expanding their economies; can we now ask emerging economies to control their emissions at their cost? Instead of

handicapping developing economies should we not handicap those that are already developed and that did so at the expense of our common environment?

TC: How can we awake people to be proactive and do what we need to address these large issues critical for sustainability? What can we do to change people's indifference and daily habits and patterns into more sustainable lifestyles? How feasible is that?

If we want environmental sustainability to be an integral part of our lifestyle you are talking about bringing about cultural change, in the case of most modern societies a very significant change. I say significant because when we talk about the environment we are talking about "the common good". This concept, however, ranks quite low in the construct of values of most modern societies.

How can we induce cultural change to strengthen the sense of "the common good"? I have to leave that one to the anthropologists. Still, I am aware that cultural change is a slow and gradual process, and by and large reactive as opposed to proactive. Since potential sustainable approaches to this problem have a long time horizon and time is of the essence we must rely on political activism and education and other awareness raising approaches for the time being. And the hard part, by personal example.

TC: What advice would you give policy students about the kind of preparation that they should engage in with regard to their education, if they are interested in doing policy work related to your field?

Knowing the CIPA Program I think that you already have a sound curriculum of core courses and excellent faculty to guide you through your area of concentration. It is hard to add to the support you already have. Let me just say that in general it is good to develop your problem analysis skills beyond quantitative methods while you are here.

For students interested in international development and in particular urbanization I would recommend that they take some anthropology along with courses on urban and regional development, with emphasis on developing countries. It is also quite important to get some time abroad, studying or doing internships; more than just travel.

TC: Is there anything else you would like to share with the Cornell community through this interview?

Yes, I would like to express my gratitude to the entire CIPA community – faculty, staff and students – as well as the larger Cornell community for the wonderful manner in which they receive me every time I come here. I very much enjoy my visits to Cornell.

Daniela Ochoa Gonzalez is pursuing her MPA with a concentration in Environmental Policy and a minor in Latin American Studies. Daniela is currently a part-time Research Associate at Insight Policy Research while attending the Cornell in Washington Program. She is committed to Sustainable Development, predominantly through environmental policies and incentives related to food security, recycling, alternative energies, and biodiversity in North America and Brazil, where she has conducted field research. Daniela earned a Bachelor of Arts in International Relations from Tec de Monterrey in 2005. *She would like to thank Paula Reichel and Dr. Ignacio Armillas for their help and cooperation.*

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