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Global Warming: A Tragedy of the Commons

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Global Warming: A Tragedy of the Commons

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Global Warming: A Tragedy of the Commons

Maebh O’Gorman

Global Warming: A Tragedy of the Commons

Abstract: This paper scrutinises two of the leading models for dealing with so-called ‘tragedy of the commons’ issues as to their suitability to tackle the problem of global warming; the polycentric model favoured by Ostrom, and the Leviathan approach as advocated by Ophuls. The paper then sets out a hybrid approach which it argues is the only viable solution to the current crisis of global warming. It proposes that, while agreement setting out goals for reductions in GHG emissions must be reached on the international arena, such an agreement should confer on each individual nation the choice of the manner of implementation, and that each nation, and also each region or locality, should devise their own strategy for achieving their required reduction. Such decentralised implementation would not only reduce the costs of both formulation and enforcement of solutions, but also permit more broad-based input by the local community, thereby resulting in an enhanced solution. Furthermore, local solutions would enable the development of a more responsive framework of rules and also facilitate regulatory competition.

While legal rules will necessarily constitute a large proportion of the governmental response, this paper also addresses the role that non-legal rules such as social norms may play. Such norms can be altered through the use of taxation, which can effect “carefully biased options,” as well as education as to the consequences of certain everyday actions. As Charny noted, systems of non-legal sanctions for the violation of the rules of conduct specified by the norm system help to explain, “in terms of ‘rationality’” why individuals often act in ways that ostensibly depart from rational self-interest. Such departure from rational self-interest is exactly what is required to counteract the rational actions which result in ‘the tragedy of the commons.’ That efficient norms may evolve among members of a close-knit community is yet another argument in favour of decentralisation of the implementation of centrally agreed goals.

Keywords: Tragedy of the Commons, Climate Change, Regulation, Decentralisation, Social Norms.

JEL Classification: K00, K20, K32, Q20, Q54.

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Global Warming: A Tragedy of the Commons

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I. INTRODUCTION TO ‘THE TRAGEDY’

The ‘tragedy of the commons’ refers to the situation when individuals, acting rationally in their own self-interest, nonetheless act irrationally as a collective group by irreparably depleting a resource that is owned in common. The current climate change crisis is an example of ‘the tragedy’ on a global scale. In the same way that a fishing bay or an open pasture is a common resource that is used by the local fishing or farming community, the atmosphere is a common resource that is enjoyed by the population of the world. ‘The tragedy’ arises because the incentive for each user to make sacrifices for the benefit of the common resource is significantly less than it is when a resource is privately owned. This is because efforts that are made to preserve the common resource benefit all users in equal measure, whether or not they have made the necessary sacrifices. In the same way, depletion or destruction negatively impacts each user in equal measure, whether or not they have made the necessary sacrifices. The dilemma therefore arises due to the difficulty in privatising the benefits gained through an individual’s sacrifices to preserve the commons. These gains are necessarily shared equally by all users, leading to the ‘free rider’ obstacle. Further, as one user’s sacrifices benefit their neighbours as much as themselves, the ‘sucker’ problem, as Ostrom calls it, arises.¹ As Hardin explains it, those users feel “secretly condemned” as simpletons for making sacrifices while other users continue to exploit the commons.² This results in users being further disinclined from making these sacrifices. These ‘free rider’ and ‘sucker’ obstacles are two sides of the one coin. Thus the rational approach of each user is to ‘free ride’ on the other users’ sacrifices, with the result that few users make the necessary sacrifices and the resource is eventually depleted or destroyed beyond repair. “Ruin is the destination toward which all men rush, each pursuing his own best interest.”³ ‘The tragedy’ is therefore a puzzle to many observers, in particular rational choice economists, as, what appear to be rational actions are in fact irrational when viewed in the long term.

While such situations can be extremely difficult to resolve, even when they occur on a small scale, the dilemma is infinitely more complex on a global level. The example used by Hardin is a common pasture. Consider that the pasture is used by 20 farmers. Each farmer who

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¹ E. Ostrom, “A Polycentric Approach for Coping with Climate Change” (2009) http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2009/10/26/000158349_20091026142624/Rendered/PDF/WPS5095.pdf, page 33, accessed 06/05/10.

² G. Hardin, “The Tragedy of the Commons” (1968) 162 Science, 1243, 1246.

³ G. Hardin (n 2), 1244.

sacrifices by limiting the number of sheep that he or she allows to graze on the pasture will receive only one-twentieth, or five percent, of the resulting benefit. In a world with over 6 billion people, the percentage benefit received by each individual who makes a sacrifice is miniscule. Further, each individual considers that any contribution they make towards reducing the problem is negligible and therefore few are inclined to make the effort. The 'free rider'/'sucker' obstacles, as outlined above, pertain here on a vast scale. The question therefore arises as to how we can overcome these obstacles, thereby causing people acting individually, within communities or within firms to work towards reducing the number of greenhouse gases they cause to be emitted into the atmosphere.⁴ This paper will scrutinise two of the three leading models for dealing with so-called 'tragedy of the commons' issues as to their suitability to tackle the problem of global warming; the polycentric model favoured by Ostrom,⁵ and the Leviathan approach as advocated by Ophuls.⁶ The third leading model for tackling such issues involves privatisation of the resource.⁷ While this approach has operated effectively to resolve 'the tragedy' in many instances, privatisation of the atmosphere is clearly not a viable alternative and consequently that model will be ignored for the purposes of this paper.

II. THE LEVIATHAN AND POLYCENTRIC MODELS

The mainstream approach to tackling 'tragedy of the commons' issues relies upon control and coercion by a centralised institution. This Leviathan model is favoured by scholars, such as Ophuls, who believe that the participants are incapable of solving the problem themselves. This however is disputed by Ostrom who argues that that approach assumes accuracy of information while ignoring the costs of its administration.⁸ Ostrom's polycentric approach advocates enabling the users of the resource to establish amongst themselves a system for its management. She argues that this approach results in both reduced informational and enforcement costs.⁹ Ostrom's polycentric model also advocates that 'commons' dilemmas are best solved at a local level.

The current approach of world leaders to the phenomenon of global warming has been intergovernmental in nature, rather than creating a global supranational institution to tackle the issue. This paper assesses whether the current approach most closely resembles the polycentric or the Leviathan approach. Such analysis is necessary as we must know exactly what type of system it is that we are advising on before we can provide profitable advice as to feasible and worthwhile improvements. The current approach resembles Ostrom's model

⁴ It is considered that the main cause of global warming, and the resulting climate change, is the release of GHGs (greenhouse gases) into the atmosphere, mainly through the burning of fossil fuels including coal, oil and gas.

⁵ E. Ostrom, *Governing The Commons: The evolution of institutions for collective action* (CUP, Cambridge 1990), 14.

⁶ E. Ostrom (n 5), 9.

⁷ E. Ostrom (n 5), 12.

⁸ E. Ostrom (n 5), 10.

⁹ E. Ostrom (n 5), 14.

in that it aims to secure agreement among all users of the resource (as represented by the governments of the nations of the world), although it clearly does not embody resolution of the dilemma at a local level. While one could argue that the global nature of the crisis obviates this 'local' requirement, Ostrom herself, in recent interviews¹⁰ and, in particular, in her recent paper to the World Bank,¹¹ has nonetheless focused primarily on solutions at a local level. The current approach of governments to global warming also resembles elements of the Leviathan model which is typically characterised by action at governmental level, which is then imposed on its citizens. This paper will then assess which model is best suited to tackling climate change and whether improvements could be made to the current approach. Such analysis is particularly necessary following the failure of the current approach to deliver a satisfactory result, as evidenced by the non-binding and aspirational declaration by world leaders following the Copenhagen Summit in December of 2009.

III. HARDIN'S SOLUTION APPLIED TO GLOBAL WARMING

Hardin's thesis, in his groundbreaking article in 1968, was that "freedom in a commons brings ruin to all,"¹² which he amended in 1985 to state that "*under conditions of overpopulation*, freedom in an *unmanaged* commons brings ruin to all."¹³ Prior to overpopulation, the resource appears in no danger of exhaustion and therefore the costs of management outweigh the benefits. However, as scarcity of the resource increases through growth in the number of users, management becomes necessary. In a similar manner, it is the rate of economic growth of developing countries such as China, India and Brazil that is placing increased urgency on the development of a solution in the case of global warming.

Hardin's solution for air pollution involves the curtailing of freedom through control and coercion.¹⁴ Due to his focus on control and coercion, he is often assumed as falling within the category of those who favour solutions devised by a centralised governing institution, and which are then forced on the users of the common resource. This, however, is not the case. Hardin expressly states that, while many interpret coercion as implying "arbitrary decisions of distant and irresponsible bureaucrats", this is not necessarily the case. Hardin's approach could arguably be classified as a hybrid of the Leviathan and polycentric models, and is therefore particularly pertinent to our current discussion. What Hardin, in fact, advocates is "mutual coercion, mutually agreed upon by the majority of the people

¹⁰ C. Seidler and C. Schwagerl, "Nobel Laureate Elinor Ostrom: Climate Rules Set from the Top Are Not Enough" (2009) <http://www.spiegel.de/international/world/0,1518,667495,00.html>, accessed 06/05/10; The Solutions Journal, "Nobel Laureate Elinor Ostrom on Why Climate Change Solutions Work Best When They're Local" (2010) <http://thesolutionsjournal.com/node/583>, accessed 06/05/10.

¹¹ E. Ostrom (n 1).

¹² G. Hardin (n 2), 1244.

¹³ G. Hardin, "An Ecolate View of the Human Predicament" (1985) http://www.garretthardinsociety.org/articles/art_ecolate_view_human_predicament.html, accessed 03/05/10.

¹⁴ G. Hardin (n 2), 1245.

affected.”¹⁵ While the focus is on coercion, it is nonetheless predicated upon the prior agreement of the parties.

This paper proposes that such a hybrid approach is the only viable solution to the current crisis of global warming. Before real change ‘on the ground’ can occur, agreement on a global level by the governments of the majority of nation-states is required. Such agreement must take the form of an acceptance of the general goal; a reduction in GHG emissions, followed by agreement as to a division of the responsibilities of each nation-state. Such a mutually agreed upon solution must then be mutually enforced. This approach takes from the polycentric model in that it relies upon agreement by the parties, accompanied by enforcement by the parties. However, while it may involve application at a local level, the ultimate decision is made at the international level and subsequently enforced on the public.

In assessing why this approach has failed thus far it is helpful to consider Hardin’s example of taxes.¹⁶ He notes that citizens accept taxes because they recognise the need for a system of taxation. This implies that it is only when users of a common resource recognise the necessity of action that they will then accept the resulting restrictions on their freedom. However, one could argue that the science of climate change being caused by human activities is beyond doubt. Why then has agreement not yet been reached? This paper argues that such agreement is dependent on two battles being waged and won. The first is knowledge; the second is trust. Such knowledge, while extensive in the developed world, is far from widespread in the developing world. Without such knowledge citizens cannot be expected to accept the costs of the necessary restrictions on their freedom. This is an epistemological challenge and it is difficult to imagine that there can be successful resolution of the dilemma until this obstacle is overcome. Secondly, trust is required. Even when people have accepted the need for action, they are slow to incur the cost of complying with the requirements if they do not trust that others will carry out their respective responsibilities. In order to facilitate this trust, effective monitoring and enforcement mechanisms must be established. Further, countries must trust that other countries are bearing their fair share of the cost. If they feel that they are disproportionately shouldering the burden they will be quick to look for ways to cheat the system in order to return themselves to what they see to be a more equitable distribution of the cost. Such an attitude is similarly evident in the way that there is significantly less tax evasion when people feel, firstly, that the division of taxes is fair and, secondly, that others are not getting away with cheating the system. Thus, a successful solution is reliant on education as to the need for restrictions and also on a fair system being devised and enforced by the relevant parties.

Finally, Hardin notes that while prohibition is easy to legislate, legislating for temperance is significantly more complex.¹⁷ Nonetheless he does proffer certain options. If usage is not to be prohibited but instead limited, then rights for usage can be allocated. Such allocation could occur on the basis of wealth, merit, by lottery or on a first-come first-served basis.¹⁸

¹⁵ G. Hardin (n 2), 1247.

¹⁶ G. Hardin (n 2), 1247.

¹⁷ G. Hardin (n 2), 1245.

¹⁸ G. Hardin (n 2), 1245.

IV. A REGULATORY FRAMEWORK: IMPLEMENTATION AND ENFORCEMENT

While some peoples and nations will respond to appeals to conscience, as discussed further below, this is not enough to effect the necessary level of change required by the current crisis of global warming. Clearly agreement must therefore be reached and enforced at a global level. How detailed such an agreement should be is open to debate. While agreement must be reached on the international arena as to the specific level of reduction in GHG emissions required by each nation, it is not necessary that such agreement should specify how such reductions should be brought about. This paper proposes that such an agreement should leave the manner of implementation of the required reduction to each individual nation, and further that each nation should set goals for each region or locality, but allow each such locality to devise their own strategy for achieving their required reduction. Thus, while the specific goal could be laid down by a centralised institution, the implementation of such a goal should be decentralised. Such local solutions are advocated by Ostrom and are exemplified in her polycentric model, although in her model all decision making is at a local level. One of the reasons as to why such local solutions can be more effective than centralised decision-making processes was set out by Hayek, widely acknowledged as the grandfather of the Chicago School of Economics, which was further developed by Milton Friedman in the 1960s, and subsequently implemented in the Reaganism of the 1980s. Hayek's argument is based on knowledge capabilities and the fact that it is neither efficient nor cost-effective for a centralised institution to retrieve and process all local information before then formulating and enforcing such a centralised solution.¹⁹ Further, a system that may be effective and efficient in one locality, can rarely be expected to be as efficient and effective in all localities due to the many variances and peculiarities among different localities. Thus local knowledge is necessary in order to devise the most effective system for any given locality. An example of local knowledge in the current context may include knowledge of the local possibilities for the production of wind or water generated energy. Additionally, local knowledge, such as the likelihood of a river drying up, may prevent a costly mistake. Thus, decentralised implementation enables more broad-based input by the local community, thereby enhancing the resulting solution.

This ties in with Ostrom's rejection of the centralised approach to resolving commons dilemmas. Not only does she argue that such an approach ignores the costs of collating and assessing local information, but it also ignores the risk that such information will be either incorrect or incomplete.²⁰ One example which Ostrom provides of this polycentric model in practice is the system for managing certain fishing bays in Nova Scotia's Port Lameron Harbour.²¹ In contrast to the years which it may take and millions which it may cost to survey fish movements in the bay and to then devise quotas and an equitable system of division of rights among those using the bay, such local knowledge will often already be known to the local fishermen and women. Therefore, if such local users can be enabled to devise a system allocating user rights within the bay, the likelihood is that such a system will not only cost significantly less to formulate and implement but will also be more likely to operate

¹⁹ F. Hayek, "The Use of Knowledge in Society" (1945) 35(4) American Economic Review, 519.

²⁰ E. Ostrom (n 5), 10.

²¹ E. Ostrom (n 5), 174.

effectively. Further, as the parties themselves have created the system, they are more likely to abide by it and also to enforce it among themselves.

Vital to any such system is the manner of its enforcement. Ostrom advocates that a locally devised solution is also more easily enforced by the local community. In this respect she gives the example of a forest which local residents have determined is being damaged through overuse and have consequently decided that no-one should be allowed entry to at weekends.²² If such a solution was formulated and enforced by a centralised institution, a member of the community who noticed someone in the forest may take no action. However, if the solution has been devised by the local community, then if one of them sees someone in the forest, they are much more likely to take action. Hardin accepts that there are times when formal enforcement of rules is not required. Shame, for example, can operate as an enforcement mechanism, although he notes that this fails to work after the members of a community exceed 150 in number.²³ In the context of global warming, formal methods of enforcement will be necessary, although certain informal enforcement mechanisms, discussed below, may also be effective regarding individuals. Formal enforcement however will be important because, firstly, as noted above, the percentage benefit to each individual who makes a sacrifice is miniscule, and, secondly, because of the need to ensure that each country implements its obligations, thereby enhancing trust in the system, the importance of which was also highlighted above.

Yet another benefit to local formulation and implementation of solutions is the fact that different solutions will inevitably develop in different localities, thus enabling regulatory competition and the resulting benefits, as identified by Tiebout in his article which demonstrated this conflict between regulatory competition and harmonisation.²⁴ Such competition enables more effective surveying of the success rate of varying systems, thereby enhancing the overall result as failing systems can learn from more successful solutions. Ostrom considers this to be a further advantage to her polycentric model, stating that; “in experimenting with rule combinations within the smaller-scale units of a polycentric system, citizens and officials have access to local knowledge, obtain rapid feedback from their own policy changes, and can learn from the experience of other parallel units.”²⁵

Not only does such decentralised implementation of a centrally formulated goal or guiding framework have the above enumerated advantages, but it also allows for a more responsive framework of rules.²⁶ If a flaw becomes apparent in a locally devised system, a local authority can much more simply and swiftly alter the system and, further, they can much more easily make amendments to the system as the need arises. The key for such a

²² C. Seidler and C. Schwagerl, “Nobel Laureate Elinor Ostrom: Climate Rules Set from the Top Are Not Enough” (2009) <http://www.spiegel.de/international/world/0,1518,667495,00.html>, accessed 06/05/10.

²³ G. Hardin, “Ecolate View” (n 13).

²⁴ C. Tiebout, “A Pure Theory of Local Expenditures” (1956) 64(5) *Journal of Political Economy*, 416.

²⁵ P. Aligica, “Rethinking Institutional Analysis: Interviews with Vincent and Elinor Ostrom” (2003) http://mercatus.org/sites/default/files/publication/Rethinking_Institutional_Analysis_-_Interviews_with_Vincent_and_Elinor_Ostrom.pdf, accessed 08/05/10.

²⁶ P. Aligica (n 25).

decentralised system, however, is to prevent the local enforcer from being ‘captured’ by any powerful interests in the locality. The eternal question of “Quis custodiet ipsos custodiet?”, translated as “Who shall watch the watchers?”, again arises and consequently a type of appeals system should therefore be put in place to counter the danger, as John Adams saw it, of a government of men and not laws.²⁷ While an appeals system may be necessary to ensure the integrity of the local regulators, it will also be necessary to ensure compliance by the regulatees. Therefore, while the rules applied at a local level may be legal or non-legal, there should remain, at the very least, a “residual role for law at the apex” of the enforcement pyramid.²⁸

In which situations such rules should be legal and non-legal is also an important question. This paper proposes that the line should be drawn between individuals and firms, with firms subject to legally binding rules, while individuals could be subject to a combination. Ostrom gives some very interesting examples of methods through which individuals’ behaviour can be altered through non-binding practices. One example she gives is of a private utility company in Sacramento, California, that began sending out ‘smiley faces’ on utility bills that were below the average use for a similar size house. Surprisingly, those houses that received personalised bills responded by decreasing their usage by two percent more than those who received standard bills.²⁹ Further, Ostrom gives the example of students who set up competitions among different dorms to lower electricity usage and that this competition resulted in reduced electricity usage.³⁰ These two examples demonstrate that people do respond to non-binding practices and therefore further research into behavioural economics may lead to much progress in this sphere. However, this paper proposes that firms, on the contrary, will not respond to such measures. This is because firms are structured, not to mention, in most cases, legally required, to respond to different incentives than individuals, with their primary focus being profit-maximising. Therefore legally binding rules or the market structure of an emissions trading system is preferable. Due to a firm’s differing incentive structure, such a trading system can operate either locally, nationally or even internationally.

V. EMISSIONS TRADING: A MARKET-BASED APPROACH

There are a number of available models for such emissions trading including the ‘economic efficiency’ model, the ‘private property rights’ model and the ‘command-and-control’ model. The ‘economic efficiency’ model aims to resolve the problem of externalities by internalising such externalities through their transformation into transferable rights which can then be

²⁷ G. Hardin (n 2), 1245.

²⁸ C. Scott, “Regulation in the Age of Governance: The Rise of the Post-Regulatory State”, in Jacint Jordana & David Levi-Faur eds., *The Politics of Regulation. Institutions and Regulatory Reforms for the Age of Governance* (Edward Elgar, Cheltenham 2005) 145, 157.

²⁹ E. Ostrom (n 1), 38.

³⁰ The Solutions Journal, “Nobel Laureate Elinor Ostrom on Why Climate Change Solutions Work Best When They’re Local” (2010) <http://thesolutionsjournal.com/node/583>, accessed 06/05/10.

cost-effectively allocated through a market structure to the highest bidder.³¹ Such a system is based on Coase's theory concerning externalities.³² The aim of the 'private property rights' model is to substitute government control of the commons with private control, while the focus of the 'command-and-control' model is to "re-regulate" by substituting previously ineffective regulation with a more flexible regulatory strategy.³³ Ostrom has remarked on the weaknesses in such market-based mechanisms, arguing that they can be "gamed" and will not result in the necessary emissions reductions.³⁴ In response to this argument, Bartlett and Hickman maintain that "we cannot afford to allow the perfect to be the enemy of the good."³⁵ This ties in with Hardin's argument for implementing a solution if it is preferable to the status quo, rather than waiting indefinitely for the perfect solution.³⁶ Further, market systems have their advantages due to the possibility that outcomes generated by the political process may be, as Yandle points out, "conditioned by special interest struggles best explained by rent-seeking and bureaucratic behaviour."³⁷ Whether or not market solutions are preferable in the context of climate change is open to debate. However, Gunningham points out that the consequences of the recent financial crisis may have implications for the development of such a system, noting that there are signs of a move towards "a new era of 'social capitalism' involving substantial government intervention and regulation to replace the freshly discovered evils of neo-liberalism and free-market fundamentalism."³⁸

VI. LEGALLY BINDING RULES V SOCIAL NORMS

Hardin noted that certain problems have no 'technical' solution,³⁹ and it is arguable that climate change requires more than just a change in techniques, but that it also requires a change in the outlook and values of the global community. While technical solutions, such as inventions regarding 'green' technologies, will certainly go no small way towards reducing the problem, it must be accepted that people, in the developed world at least, will also have to change their attitudes. Such an alteration may involve a change in their attitude towards wastage of food or electricity, or whether it is viewed as acceptable to drive to a shop located just a five minute walk away, or even whether it is viewed as acceptable to eat meat. Thus social norms will also need to change. Although clearly not all such changes can be

³¹ S. Bogojevic, "Ending the Honeymoon: Deconstructing Emissions Trading Discourses" (2009) 21(3) J.Env.L. 443, 452.

³² R. Coase, "The Problem of Social Cost" (1960) 3 J.L. & Econ. 1.

³³ S. Bogojevic (n 31), 456, 460.

³⁴ T. Vedeld, "Thoughts from Cop 15" (2009) <http://blog.nibrinternational.no/#category4.0>, accessed 08/05/10.

³⁵ S. Bartlett and J. Hickman, "Copenhagen as a Monumental Tragedy of the Commons" (2009) <http://www.onlineopinion.com.au/view.asp?article=9844&page=2>, accessed 08/05/10.

³⁶ G. Hardin (n 2), 1247.

³⁷ B. Yandle, 'Public Choice at the Intersection of Environmental Law and Economics' (1999) 8(1) E.J.L. & Econ. 5, 23.

³⁸ N. Gunningham, 'Environment Law, Regulation and Governance: Shifting Architectures' (2009) 21(2) J.Env.L. 179, 211.

³⁹ G. Hardin (n 2), 1243.

implemented by a set of legally binding rules, changes in such social norms can, in certain instances, be induced through the passing of legislation. Just as failure to send children to primary school a century ago, or drink-driving just a few decades ago, was not necessarily frowned upon, the introduction of legislation altered attitudes dramatically and now significantly fewer people would drink-drive even if the legislation was repealed, and even fewer would dream of not sending their children to primary school. Alternative efforts to alter such social norms can include taxation, which can effect “carefully biased options,”⁴⁰ as well as education as to the consequences of certain everyday actions. If social norms can be modified in such a manner, shame can act as an effective enforcement mechanism for communities of much larger membership than merely 150 people. Charny notes that such a system of non-legal sanctions for the violation of the rules of conduct specified by the norm system explains “in terms of ‘rationality’ why individuals often acted in ways that seemingly departed from rational self-interest.”⁴¹ Such departure from rational self-interest is exactly what is required to counteract the rational actions which result in ‘the tragedy of the commons.’ The difficulty is that such norms take longer to develop and therefore are more of a long term solution to an urgent crisis. Nonetheless, such informal institutions, despite being more difficult to spontaneously establish than the setting down of legally binding rules, can also be more effective once they become embedded in a community’s psyche. Teubner chillingly illustrated the power of social norms in his article concerning an ‘honour’ killing, in which the social norms of the local Columbian community triumphed over the local law, despite the fact that such norms were not considered ‘good’ or ‘better’ than the local law, even by the local community.⁴² Charny further notes that transactional settings are the preferable environment for the creation of spontaneous norms because the repeated transactions allow for both refinement and effective enforcement of such norms. He highlights the fact that common-pool systems generally lack such transactional opportunities, although he quotes Ellickson who emphasises that efficient norms may still evolve among members of a “close-knit community.”⁴³ This is yet again another argument for decentralisation of the implementation of centrally agreed goals. However, when such norms develop they may then be organised and transplanted to other regions or sectors of an economy. This highlights the cyclical quality of such norms, which may be induced through legislation and then allowed to be informally enforced, or which may develop spontaneously only to be subsequently codified and centrally implemented. Further, as Charny notes, this political impulse towards organisation may be crucial as decentralised spontaneous generation and enforcement of norms will likely be too haphazard to achieve effectiveness across large, complex, geographically dispersed systems.⁴⁴ Prior to such organisation however, an assessment should be made as to the effectiveness of such norms. Charny is not convinced, as he maintains Llewellyn was, of the “Hayekian belief in the wisdom and durability of embedded social norms, which the law would adopt if enlightened and would oppose at its peril.” In contrast to their position, Charny describes Bernstein’s

⁴⁰ G. Hardin (n 2), 1246.

⁴¹ D. Charny, “Illusions of a Spontaneous Order: ‘Norms’ in Contractual Relationships” (1996) 144 *University of Pennsylvania Law Review*, 1841, 1845.

⁴² G. Teubner, “Regulatory Law: Chronicle of a Death Foretold” (1992) 1 *Social and Legal Studies*, 451.

⁴³ D. Charny (n 41), 1846.

⁴⁴ D. Charny (n 41), 1847, 1248.

work as “exemplary.”⁴⁵ While it must be noted in this respect that Charny and Bernstein are discussing commercial norms, their conclusion is also of relevance to the current context of global warming.

VII. HARDIN’S ‘CONSCIENCE’ ARGUMENT

It is worth considering Hardin’s argument that relying only on a person’s conscience could lead to the eventual extinction of those with a conscience.⁴⁶ The question arises as to whether this applies by analogy to regulation on a country by country basis, or even to Ostrom’s preference for action on a local level. The question is thus; will regulation by only western countries merely serve to substantially weaken their economies, either by causing their products to become uncompetitive or by forcing their enterprises to relocate to unregulated countries. It is up for debate as to whether it is preferable for European countries to lead by example or to maintain their position of power as a bargaining tool in order to eventually encourage other countries to regulate along with us. Either conclusion would invariably depend on whether or not European countries considered that the industrialised developing nations were close to accepting the need for action and therefore likely to follow our lead.

VIII. TRANSACTION COSTS AND RATIONAL CHOICE THEORY

Since reaching a binding agreement at international level has proven extremely difficult, it is worth considering some of the possible reasons for this failure. In this regard it is interesting to consider Coase’s theory that one of the chief obstacles to the conclusion of agreements is high transaction costs.⁴⁷ Given the complexity of the issue, high transaction costs are clearly an obstacle to international agreement. Such complexity is evident in the debate as to how best to distribute responsibility given the developed countries’ historical responsibility for the crisis, and the disagreement as to whether larger nations with forests should be allowed to discount these carbon sinks against their obligations to reduce emissions. According to Coase’s hypothesis, if such transaction costs could be reduced, the probability of successful agreement would increase. Further, rational choice theory states that parties behave rationally, in this context by not reaching agreement. The question thus arises as to whether it is possible in the circumstances to make reaching agreement the rational choice for the participants.

IX. CONCLUSION

The ‘tragedy of the commons’ is not a modern occurrence. As Aristotle noted, “that which is common to the greatest number gets the least amount of care.”⁴⁸ However, its current

⁴⁵ D. Charny (n 41), 1854.

⁴⁶ G. Hardin (n 2), 1246.

⁴⁷ A. Aviram, "A Note on Economic Theories of the Firm" (2006) <http://ssrn.com/abstract=880435>, page 6, accessed 14/09/09.

⁴⁸ Aristotle, Politics, Book II, Chapter 3.

manifestation in the form of global warming constitutes the playing out of 'the tragedy' on possibly its grandest scale yet. Neither a local solution nor a global solution alone will be sufficient. As such it requires a new approach, a fusion of the models developed thus far, in order to enable the tackling of the crisis on all fronts. Such a hybrid solution therefore should entail international agreement on a framework goal for emissions reductions, followed by decentralised local implementation, at least regarding individuals. Further, such local implementation, in the case of firms, may be sectorally local as well as geographically local, and in this regard the increased research being undertaken into networks theory may be immensely beneficial.

It can be expected that, within the next ten if not five years, agreement will have been reached on the international stage, providing for concrete and binding goals regarding emissions reduction. Such a prediction is based on the fact that awareness of the crisis and its consequences is steadily increasing. However, the fear is that, due to the global nature of the problem, and the necessity for international agreement as to the guiding framework, that the possibility for locally devised solutions to a global problem will be overlooked. Professor Ostrom, following her Nobel Prize in Economic Sciences, recently gave a presentation to the World Bank, in which she focused on the importance and benefits of such local solutions. My hope is that she maintains her presence in this arena so that her proposals can, whenever solid and binding international agreement is finally reached, form part of the implementation framework. However, while Ostrom has much to teach us, Garrett Hardin's article, written over forty years ago, and constituting only five pages, also contains a vast array of advice which is immensely pertinent for the current generation faced with tackling this global crisis. Finally, Hickman and Bartlett have noted that crises "often compel new thinking about political institutions, and the necessity to respond to the shared threat of global warming may be the reason that we devise something more workable than the nation-state."⁴⁹ Such a statement is true and it is possible that a more effective international structure will result from the current crisis. While nations have experimented with many forms of governance, from monarchy to dictatorship to democracy, our experimentations with global governance are in their infancy. The United Nations has certainly not been an unqualified success and, while the European Union has had significant success, it appears to be now facing its own crisis. Global warming may well be the catalyst for a new approach.

⁴⁹ J. Hickman and S. Bartlett, "Global Tragedy of the Commons at COP 6" (2001) <http://www.greens.org/sr/24/24-26.html>, accessed 08/05/10.

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