The Failure of Copenhagen: A Neo-Liberal Institutionalist Perspective
Brad R. King

Abstract
Climate change is one of the most pressing issues facing the world today, an issue that requires a global solution. It is for this reason that a UN Conference on Climate Change (COP 15) was held in Copenhagen, Denmark, with the objective of producing a legally binding international climate change agreement. The purpose of this paper is to determine the extent to which the theoretical perspective referred to as neo-liberal institutionalism, explains the failure of the Copenhagen Summit—as it is commonly known—to produce a binding international agreement. This paper argues that, within the neo-liberal institutionalist framework, it is quite possible to provide a compelling explanation regarding the failure of Copenhagen. This, it is argued, is due to the fact that two 'situational dimensions' identified by the proponents of this theoretical perspective, as 'affecting the propensity of actors to cooperate'—the payoff structure and the length of the shadow of the future —provide useful tools for determining why cooperation broke down at the conference; and, thus, why a binding agreement was not produced.

Introduction

"The danger posed by war to all of humanity - and to our planet - is at least matched by the climate crisis" (Osborne, 2007). As is evident by this quote from UN Secretary-General Ban Ki-Moon, climate change is one of the most pressing issues facing the world today, an issue that requires a global solution. It is for this reason that a UN Conference on Climate Change (COP 15) was held in Copenhagen, Denmark, from 7-18 December 2009, with the objective of producing a legally binding international climate change agreement (BBC News, 2007). However, despite the seriousness of the climate change problem, the conference was unable to accomplish this objective (BBC News, 2009).

The purpose of this paper is to determine the extent to which the theoretical perspective referred to as neo-liberal institutionalism (or simply liberal institutionalism), explains the failure of the Copenhagen Summit—as it is commonly known—to produce a binding international agreement. This paper argues that, within the neo-liberal institutionalist framework, it is quite possible to provide a compelling explanation regarding the failure of Copenhagen. This, it is argued, is due to the fact that two 'situational dimensions' identified by the proponents of this theoretical perspective, as 'affecting the propensity of actors to cooperate'—the payoff structure and the length of the shadow of the future (Axelrod and Keohane, 1985: 228)—provide useful tools for determining why cooperation broke down at the conference; and, thus, why a binding agreement was not produced. In order to support this thesis, this paper will use these dimensions to demonstrate that the reason cooperation failed at Copenhagen—and a binding agreement was not established—was because the payoff structure was that of a Prisoners' Dilemma; and because the shadow of the future was short, making this Prisoners' Dilemma game single-play in nature.

This paper is divided into two sections. Section I will first demonstrate how certain payoff structures reflect certain games. It will then discuss the reason why the Copenhagen Summit represents a Prisoners' Dilemma game, and how this affected cooperation amongst the 192 states

36

at the conference. Section II will first consider the implications of both a short and long shadow of the future on the nature of a Prisoners' Dilemma—whether it is single-play or iterated. It will then discuss the reason why the shadow of the future during Copenhagen was short in nature, and how this affected cooperation.

Payoff Structures

Payoffs and Games

The term payoff structure, as it is used here, refers to the benefits accruing to actors from an outcome of mutual cooperation (CC) relative to an outcome of mutual defection (DD), and the benefits of an outcome of unilateral defection (DC) relative to an outcome of unreciprocated cooperation (CD) (Van Evera, 1985: 80). The payoff structure defines the "game" in which actors "play"; that is, whether the game is a Prisoners' Dilemma, Harmony or Deadlock[1], depends on the payoff structure. In a game of Harmony actors have mutual interests; that is, they all prefer a certain reality i.e. the existence of an open global market. Therefore, since an outcome of mutual cooperation (CC) is more conducive to the realisation of such interests, than is an outcome of mutual defection (DD), mutual cooperation produces more benefit for the actors than does mutual defection; thus, CC > DD. Also in a game of Harmony, actors prefer an outcome of unreciprocated cooperation (CD) to an outcome of unilateral defection (DC). Using the example of the open global market, if actors were adherents of pure liberal economic principles, they would prefer unrequited cooperation—maintaining the openness of one's market despite the protectionism of others—to unilateral defection—unilateral protectionism despite openness of others. The reason being that pure liberal economic adherents believe that openness is best, no matter what; that is, that one gains more benefit from cooperating than from defecting, regardless of the actions of others. Therefore, in a game of Harmony the payoff structure is as follows: CC > CD > DC > DD (Oye, 1985: 6).

In a game of Deadlock there exists no mutual interests, actors do not all prefer the same reality. Once again using the example of the global market, in a game of Deadlock some actors will prefer a closed global market to an open one, and vice versa. Therefore, since mutual defection (DD) will lead to the realisation of a closed global market, this outcome will produce more benefit for those actors that prefer this reality than would mutual cooperation (CC). On the other hand, since mutual cooperation (CC) leads to an open market, this outcome will produce more benefit for those actors that prefer *this* reality than would mutual defection (DD). Unilateral defection (DC) and unreciprocated cooperation (CD) do not produce benefit for either of the actors since in order to realise their interests the outcome must be (DD), for those whose interest is the existence of a closed global market, and (CC), for those whose interest is the existence of an open global market (Oye, 1985: 6-7). As a result, the payoff structure of a game of Deadlock is CC > DD for some actors, and DD > CC for others.

Unlike a game of Harmony, a purely cooperative game, or a game of Deadlock, a purely conflictual one, a Prisoners' Dilemma game is, what Thomas Schelling has referred to as, a "mixed-motive game" (1960: 89). In such games, players prefer mutual cooperation (CC) to mutual defection (DD), but also prefer unilateral defection (DC) to unreturned cooperation (CD) (Oye, 1985: 6). The Prisoners' Dilemma is as follows: the Crown Attorney is questioning two

guilty partners in a crime separately. Both of them knows that if neither of them confesses the Crown will only have enough evidence to convict them for the low-level crime for which they were arrested, which means they will only go to prison for 30 days each; and if both confess they will each be given a prison sentence of one year. If this were the decision each prisoner faced, each would have the incentive not to confess. Except, the Crown has also promised each of them that if either confesses while the other does not, the confessor will walk free, and his partner will receive a five-year sentence. Expressed in game theoretic terms, the defective strategy for each prisoner is to confess, whereas the cooperative strategy is to "stonewall" or not confess. In such a situation, defection is the dominant strategy of each prisoner; dominant strategy being the course of action that is in each prisoner's rational self-interest. If prisoner A cooperates then prisoner B will gain more benefit by defecting than he would by cooperating; by defecting he walks free, by cooperating he serves 30 days in prison. Moreover, if prisoner A defects then once again prisoner B will gain more benefit by defecting than he would by cooperating; by defecting he serves one year in prisoner, by cooperating he serves five years. However, since both prisoners are assumed to be rational and self-interested, each will follow his dominant strategy, leading to mutual defection (DD); both are worse off than they would have been if they had cooperated (Keohane, 2005: 68-69). The payoff structure of a Prisoners' Dilemma game is thus: DC > CC > DD > CD.

In a Prisoners' Dilemma game, as in one of Harmony, there exist mutual interests; that is, all actors prefer mutual cooperation (CC) to mutual defection (DD).[2] The difference between these two games, however, is that in a game of Harmony all actors also prefer unrequited cooperation (CD) to unilateral defection (DC), whereas in a Prisoners' Dilemma game it is the opposite (Oye, 1985: 6-7). As a result, in a game of Harmony the actions of players automatically result in the attainment of mutual interests; in other words, simply by following their dominant strategy (cooperation), players produce an outcome of mutual cooperation (Keohane, 1988: 380). In a game of Prisoners' Dilemma, on the other hand, by following their dominant strategy (defection), players do not produce a mutually cooperative (CC) outcome—and do not attain their mutual interests; rather, they produce a mutually defective (DD) outcome. This does not mean, though, that actors can never realise their mutual interests; doing so, however, requires cooperation.

"Cooperation", here, is defined as it is by Robert O. Keohane (2005: 51) in his book-length project, *After Hegemony*. Keohane defines cooperation as the bringing into conformity of the actions of separate actors through a process of negotiation, often referred to as 'policy coordination'; that is, cooperation takes place when 'actors adjust their behaviour to the actual or anticipated preferences of others'. The extent to which actors can cooperate is strongly affected by the length of the shadow of the future, which determines whether the Prisoners' Dilemma game is iterated or single-play; iteration positively affects cooperation. This will be discussed in Section II. This section will now demonstrate why states at Copenhagen were involved in a Prisoners' Dilemma game.

Copenhagen: A Prisoners' Dilemma?

According to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, a global temperature rise of above two degrees centigrade could have 'dangerous' and 'irreversible' consequences for the climate system; temperature increase being the result of the

emission of greenhouse gases (GHG) into the atmosphere. The report predicts that if global average temperature surpasses this two degree threshold, there is likely to be: major changes in temperature patterns, with the extended warmer periods increasing water demand and evaporative losses, as well as the intensity and duration of droughts; an increase in precipitation at high latitudes and a decrease in some mid-latitude regions, increasing, together with a general intensification of rainfall events, the frequency of flash floods and large-area floods in many regions, especially at high latitudes; an intensification of tropical cyclones (including hurricanes and typhoons) as sea surface temperature increases, with models projecting increases by mid-century; and more frequent and intense storm surges, with damages being exacerbated by more intense inland rainfall and stronger winds (Schneider et al., 2007).

These are just a few of the projected consequences of continuing to emit GHGs into the atmosphere, leading to a global temperature increase of over two degrees centigrade. It is, nevertheless, evident that such climatic changes will have serious and detrimental effects on the planet, and on humans in particular. Therefore, it is in the interest of all humans—and therefore all states—that such climatic changes not occur; that is, there exists a *mutual interest amongst all actors* (states, in this case): the absence of serious climate change. In order to realise this mutual interest, however, all actors must reduce their GHG emissions or, in the context of the Copenhagen Summit, all actors must agree to a binding international agreement on reducing emissions. Thus, in game-theoretic terms, the cooperative strategy at Copenhagen was agreeing to a binding agreement and the defective strategy was not agreeing, with mutual cooperation (CC) resulting in the attainment of the mutual interest and mutual defection (DD) not resulting in its attainment. Thus, for each state at the conference CC > DD, meaning the Copenhagen Summit was either a game of Harmony or Prisoners' Dilemma; not Deadlock, since climate change was not, and is not, in any actor's interest.

In a globalised world, the ease by which large corporations can move from one region, where the cost of operation is high, to another region, where the cost is lower, is quite impressive. This means that a country that has environmental regulations, which increases the cost of operation for most large companies, will look less attractive to these corporations than would a country without environmental regulations, and thus, without the added cost of operation. As a result, such large corporations tend to move their operations from those countries with environmental regulations, to those without such regulations, reducing the number of jobs and revenue in the former, and increasing it in the latter. The loss of a significant number of such corporations could destroy an economy. It is for this reason that countries are concerned with competitiveness (Black, 2010)—their attractiveness to capital—and why, at the Copenhagen Summit the dominant strategy for states was defection and not cooperation; that is, defection was the rational, self-interested course of action. If state A cooperated, state B would be better off defecting—gaining capital investment—and If state A defected, state B would once again be better off defecting—avoiding a CD outcome, where state A gained capital investment and state B suffered capital flight. The Copenhagen Summit was, therefore, a Prisoners' Dilemma. Although each state preferred mutual cooperation (CC) to mutual defection (DD), the dominant strategy for each state was defection and not cooperation. This meant that by following their dominant strategy—their individual rational course of action—states produced a mutually defective (DD) outcome, leaving all worse off than if they had cooperated.

The Prisoners' Dilemma game described in this section has been one of a single-play nature; however, Prisoners' Dilemma can also be iterated. Whether a game is single play or iterated depends on the length of the shadow of the future. This will be discussed in the following section.

The Shadow of the Future

The Shadow of the Future and Single-Play or Iteration

As just mentioned, the length of the shadow of the future determines the nature of a Prisoners' Dilemma game—whether it is a single-play or an iterated game; the shadow of the future being the degree to which future payoffs (gains) are valued relative to current ones, or the degree to which future payoffs are 'discounted' (Axelrod and Keohane, 1985: 232). A long shadow of the future—small discount rate—generates an iterated Prisoners' Dilemma game, and a short shadow of the future—large discount rate—creates a single play game. Under single-play conditions, actors value the short-term more than the long term; they are, thus, continuously tempted by immediate gains from unilateral defection (DC), and weary about immediate losses from unreciprocated cooperation (CD). In contrast, under iterated conditions actors are less tempted by immediate gains from unilateral defection (DC), and less fearful of immediate losses from unrequited cooperation (CD); they value the long-term more than they value the short-term. Therefore, under single-play conditions defection is the dominant strategy for actors, while under iterated conditions the dominant strategy is cooperation (Oye, 1985: 12-14). As a result, cooperation is more likely under iterated, rather than single-play, conditions. Therefore, the short nature of the Copenhagen shadow of the future could be important in explaining why cooperation failed and, therefore, why a binding agreement was not produced. This section will now demonstrate why the length of the shadow of the future was short, and in so doing will provide another reason, in addition to the payoff structure, for the failure of the Copenhagen Summit.

Copenhagen: A Single-Play Game?

This section identifies a major reason why the shadow of the future during the UN Conference on Climate Change was short in nature, this reason being the existence of a widely held belief that a quick and inexpensive technological innovation will solve the problem of climate change, and allow for the continuation of business as usual. Although, there are perhaps many sources of this belief, this section identifies two possibilities: "geo-engineering" and "carbon capture and storage". Geo-engineering is the use of various, relatively inexpensive, 'quick-fix' techniques to cool the Earth's temperature and, thus, potentially slow down climate change. These techniques include the positioning of millions of tiny mirrors in space for the purpose of reflecting back some of the sun's rays; the spraying of sea water into the atmosphere in order to make it cloudier—thus, filtering the Sun's energy; the extraction of CO_2 from the atmosphere and oceans; the painting of roofs white; and, a slightly more expensive technique, the use of rockets to launch tonnes of sulphur into the stratosphere, creating a planetary sun screen (Bowlby, 2008).

Carbon capture and storage, on the other hand, is a method of capturing carbon dioxide (a major GHG) and storing it, potentially reducing emissions of CO_2 into the atmosphere; thereby stopping or, at least, slowing down climate change. It is a three step process: *capturing* carbon emissions from power stations and other industrial sources; *transporting* the captured CO_2, by pipelines, to storage areas; and *storing* the CO_2 in geological sites such as depleted oil and gas fields (Department of Energy and Climate Change, 2010).

The belief that the climate crisis will be solved by a quick and inexpensive technological innovation, that will allow for the continuation of business as usual, shortened the Copenhagen shadow of the future. Since states believed that the problem would soon be solved, they highly discounted the future—they valued the short-term more than the long-term. And as previously mentioned in this section, when the shadow of the future is short, a Prisoners' Dilemma game becomes single-play, rather than iterated, in nature; causing the players of the game to constantly be tempted by immediate gains from unilateral defection (DC), and weary of immediate losses from unrequited cooperation (CD). The dominant strategy, as a result, becomes defection, making the likelihood of cooperation very slim. Therefore, the short shadow of the future provides another reason, in addition to the payoff structure, for the failure of the Copenhagen Summit to produce a binding international climate change agreement.

Conclusion

Despite the seriousness of the climate change problem, the 2009 UN Conference on Climate change, responsible for producing a binding international agreement reducing global emissions of GHGs, failed to achieve its objective due to the breakdown of cooperation amongst the 192 states involved. The purpose of this paper was to determine the extent to which the neo-liberal institutionalist perspective explains the breakdown of cooperation at, and thus the failure of, the Copenhagen Summit. This paper argued that it is very possible, through the neo-liberal institutionalist framework, to provide a valid explanation for why cooperation failed at Copenhagen, and thus why a binding international agreement was not produced. In order to support this thesis, this paper used two 'situational dimensions', identified by the proponents of neo-liberal institutionalism as having an effect on the propensity of actors to cooperation—the payoff structure and the length of the shadow of the future—to determine why cooperation failed at the conference; and therefore, why a treaty was not produced. In so doing, this paper demonstrated that the reason Copenhagen failed was because the payoff structure was that of a Prisoners' Dilemma, and because the shadow of the future was short, making the existent Prisoners' Dilemma single-play in nature; a single-play game being the least cooperative type of Prisoners' Dilemma.

The findings of this paper are important in that they show, despite the difficulty of doing so, cooperating is not impossible. By extending the shadow of the future, through the realisation of the non-existence of a quick-fix technology, or by restructuring payoffs to produce a game of Harmony, through the restriction of capital mobility, cooperation can occur. Therefore, even though cooperation is difficult, it is not impossible; the states of the world can cooperate to combat climate change.

These findings are not, however, limited in scope to global cooperation on climate change. The same dimensions—payoff structure and length of the shadow of the future—could also be used in determining the failure or success of cooperation in areas such as nuclear proliferation, global finance, trade, peacekeeping and so on. The applicability of the findings of this paper is, therefore, quite broad.

In addition to the 'situational dimensions' of payoff structure and length of the shadow of the future, neo-liberal institutionalists also identify the number of players as having an effect on cooperation. This paper did not include this dimension, however, due to the limited size of the project and the resultant inability to deal with the complexities involved with its incorporation. Therefore, in a larger, more comprehensive project this dimension should also be included in order to obtain a more complete picture.

The findings of this paper have demonstrated that, despite the fact that states interact with one another within an anarchic international system, cooperation amongst them is not impossible; it is however very difficult, and dependent upon a number of factors.

---

[1] There are other games; however, these are the most relevant to this paper.

[2] In a game of Deadlock there exists no mutual interests; at least some actors prefer mutual defection (DD) to mutual cooperation (CC)

References

Axelrod, Robert and Robert O. Keohane. 1985. "Achieving Cooperation under Anarchy: Strategies and Institutions." *World Politics* 38(1): 226-254.

BBC News. 2007. *At a Glance: Bali Climate Deal*. http://news.bbc.co.uk/2/hi/science/nature/7146132.stm.

BBC News. 2009. *Q&A: The Copenhagen Climate Summit*. http://news.bbc.co.uk/2/hi/science/nature/8278973.stm.

Black, Richard. 2010. " 'Slim' Prospects for Climate Deal this Year." *BBC News*. http://news.bbc.co.uk/2/hi/science/nature/8614180.stm.

Bowlby, Chris. 2008. "A Quick Fix for Global Warming." *BBC News Magazine*. http://news.bbc.co.uk/2/hi/uk_news/magazine/7533600.stm.

Department of Energy and Climate Change. 2010. *Carbon Capture and Storage*. http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/ccs/ccs.aspx.

Keohane, Robert O. 1988. "International Institutions: Two Approaches." *International Studies Quarterly* 32(4): 379-396.

Keohane, Robert O. 2005. *After Hegemony: Cooperation and Discord in the World Political Economy.* Princeton; Oxford: Princeton University Press.

Oye, Kenneth A. 1985. "Explaining Cooperation under Anarchy: Hypotheses and Strategies." *World Politics* 38(1): 1-24.

Osborne, Hilary. 2007. "Climate Change is Our Top Priority, says UN Chief." *The Guardian Online*. http://www.guardian.co.uk/environment/2007/mar/02/climatechange.climatechangeenvironment

Schelling, Thomas C. 1960. *The Strategy of Conflict*. Cambridge: Harvard University Press.

Schneider, S.H., S. Semenov, A. Patwardhan, I. Burton, C.H.D. Magadza, M. Oppenheimer, A.B. Pittock, A. Rahman, J.B. Smith, A. Suarez and F. Yamin, 2007: *Assessing Key Vulnerabilities and the Risk From Climate Change. Climate Change 2007: Impacts, Adaptation and Vulnerability.* Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 779-810.

Van Evera, Stephen. 1985. "Why Cooperation Failed in 1914." *World Politics* 38(1): 80-117.