

The Illusion of Anarchy: Chaos, Complexity and the Origins of World War One¹

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Introduction

The discipline of international relations is, like all other social sciences, riddled with contests between committed academics. Passionate debates ensue where theoretical realists and theoretical liberals argue over the hope for cooperation in the international system, the former arguing that any cooperation will be time and commitment limited and the latter arguing that, with understanding and rules, cooperation is likely.² Consider also the reasons for conflict in international relations: some argue it is simply a manifestation of human nature, others that irrational leaders are too quick to act, other still that the constraints of the system result in a system that will always be subject to conflict and war regardless of the individual actors intents.³ Debates rage too between those who see changes in international polarity as explicitly dangerous and those who see little difference between a multipolar, bipolar or unipolar world with regards to the incidence and extent of conflict.⁴ Further still, arguments proceed between those who see a state's military as the best expression of power and those who consider economic power much more important, those who see a rising China as good for the US and those who see it is as bad, and those who see the UN as the culmination of humanity's moral advance and those who consider the

¹ This paper was originally presented at the 2nd Graduate Conference in the Social Sciences, Central European University, Budapest, Hungary, 5-6th May 2006.

² This debate is constant within the major journals in the field. A classic example was the exchange of views in *International Security* in the mid-1990s. See John J. Mearsheimer. 1994. 'The False Promise of International Institutions.' *International Security* 19(3): 5-49; Robert O. Keohane and Lisa L. Martin. 1995. 'The Promise of Institutional Theory.' *International Security* 20(1): 39-51; Charles A. Kupchan and Clifford A. Kupchan. 1995. 'The Promise of Collective Security.' *International Security* 20(1): 52-61; John Gerard Ruggie. 1995. 'The False Promise of Realism.' *International Security* 20(1): 62-70; John J. Mearsheimer. 1995. 'A Realist Reply.' *International Security* 20(1): 82-93.

³ The classic study on this subject is Kenneth N. Waltz. 2001. *Man, the State, and War*. 2nd edition. New York: Columbia University Press. See also David Dessler. 1991. 'Beyond Correlations? Towards a Causal Theory of War.' *International Studies Quarterly* 35(3): 337-355; James D. Fearon. 1995. 'Rationalist Explanations for War.' *International Organization* 49(3): 379-414; Jack S. Levy. 1998. 'The Causes of War and the Conditions of Peace.' *Annual Review of Political Science* 1(1): 139-165.

⁴ See, for example, the exchange between John Mearsheimer, Robert Keohane and Stanley Hoffman in *International Security*: John J. Mearsheimer. 1990. 'Back to the Future: Instability in Europe after the Cold War.' *International Security* 15(1): 5-56; Stanley Hoffmann, Robert O. Keohane and John J. Mearsheimer. 1990. 'Back to the Future, Part II: International Relations Theory and Post-Cold War Europe.' *International Security* 15(2): 191-199.

organisation merely a manifestation of great power politics.⁵ Anything within the discipline of international relations is, it seems, open to contention by other scholars. Anything, that is, except for one notion that defines the field, separating it from wider political science: anarchy.

To imagine international relations as a distinct discipline within political science is to imagine politics and political interactions taking place within an anarchic realm. Indeed, Brian Schmidt's history of the study of international relations is titled simply, *The Political Discourse of Anarchy*, a nod to his argument that international relations has been and continues to be the study of political interaction in an anarchic world.⁶ Where personal, domestic and intra-actor politics may be rule bound and have legally enforceable sanctions for unacceptable actions, in the international system there is no such sanctioning power and no higher government to whom an aggrieved power may appeal for restitution.⁷ No higher authority exists that maintains the power to control all other actors, nor does an actor exist that has the power to influence every other actor. Even if the system can be described as unipolar – that is, where a sole superpower maintains influence and power unequalled and unchallenged by any other single power – anarchy remains a constant and challengers to the unipolar power are historically quick to rise and topple its predominance.⁸ Thus, as Waltz argues, the elements within the system can change of themselves and in relation each other, but the essential, anarchic nature of the system does not change.⁹

⁵ On military versus economic power see Norman Z. Alcock and Alan G. Newcombe. 1970. 'The Perception of National Power.' *The Journal of Conflict Resolution* 14(3): 335-343; AFK Organski. 1958. *World Politics*. New York: Knopf, p.436. On China and the US see Robert Sutter. 2005. 'China's Regional Strategy and Why It May Not Be Good For America.' in *Power Shift: China and Asia's New Dynamics*, edited by David Shambaugh. Berkeley: University of California Press, pp.289-305; David M. Lampton. 2005. 'China's Rise in Asia Need Not Be at America's Expense.' In *Power Shift: China and Asia's New Dynamics*, edited by David Shambaugh. Berkeley: University of California Press, pp.306-326. On the UN see Robert Jackson. 2003. *The Global Covenant: Human Conduct in a World of States*. Oxford: Oxford University Press, pp.1-25; David Rieff. 1995. *Slaughterhouse: Bosnia and the Failure of the West*. New York: Simon & Schuster.

⁶ Brian C. Schmidt. 1998. *The Political Discourse of Anarchy: A Disciplinary History of International Relations*. Albany: State University of New York. A complementary argument is offered in Steve Smith. 2000. *The Discipline of International Relations: Still an American Social Science?* Paper presented at the Annual Conference of the Australian Political Science Association, Canberra, Australia, 5th October 2000.

⁷ Waltz explains the interactions, alliances and conflict that emerge in such an anarchic system thus: "Despite changes that constantly take place in the relations of nations, the basic structure of international politics continues to be anarchic. Each state fends for itself with or without the cooperation of others." See Kenneth N. Waltz. 1993. 'The Emerging Structure of International Politics.' *International Security* 18(2): 44-79, p.59.

⁸ Charles Krauthammer. 1991. 'The Unipolar Moment.' *Foreign Affairs* 70(1): 23-33. On the difficulties faced by states in maintaining such 'unipolar moments' see Michael Mastanduno. 1997. 'Preserving the Unipolar Moment: Realist Theories and U.S. Grand Strategy after the Cold War.' *International Security* 21(4): 49-88. A practical public policy approach to doing the same is outlined in Thomas Donnelly. 2000. *Rebuilding America's Defenses: Strategy, Forces and Resources For a New Century*. Washington, DC: Project for the New American Century.

⁹ Kenneth N. Waltz. 2000. 'Structural Realism after the Cold War.' *International Security* 25(1): 5-41, pp.5-6.

Agreement on the anarchic nature of the system exists across most of the major theories of international relations. Realism, for example – being the theoretical approach that remains the primary or alternative theory in virtually every book and article addressing general theories of world politics – has maintained the centrality of anarchy to its assessment of the international realm since its precepts were first outlined.¹⁰ Anarchy, for realists, is the defining feature of international politics and the implications of anarchy for actors within the international sphere are what drive both peaceful and non-peaceful interactions.¹¹ Theoretical liberals also agree that anarchy forms a central tenet of international interaction, though they derive significantly different implications from the reality of an anarchic system.¹² As Alexander Wendt notes, there is wide agreement between these two paradigms on the nature of anarchy; indeed, both realists and liberals (who comprise the majority of international relations scholars) share an agreed understanding of anarchy, resulting in its acceptance throughout the discipline as the basis for all international interaction.¹³

Even the so-called constructivists do not deny the *existence* of anarchy, only its implications and its construction. As Wendt himself claims:

I argue that self-help and power politics do not follow either logically or causally from anarchy and that if today we find ourselves in a self-help world, this is due to process, not structure. There is no “logic” of anarchy apart from the practices that create and instantiate one structure of identities and interests rather than another; structure has no existence or causal powers apart from process.¹⁴

For Wendt and other constructivists, anarchy remains existential but the implications are constructed by the actors, not present in some sort of ‘anarchic logic’ as others have claimed.¹⁵ Constructivists submit that the implications and

¹⁰ Jeffrey W. Legro and Andrew Moravcsik. 1999. ‘Is Anybody Still a Realist?’ *International Security* 24(2): 5-55, p.5. See also Charles R. Beitz. 1979. *Political Theory and International Relations*. Princeton: Princeton University Press, p.35; Jack Donnelly. 2000. *Realism and International Relations*. Cambridge: Cambridge University Press, p.2.

¹¹ See, for example, Joseph M. Grieco. 1988. ‘Anarchy and the Limits of Cooperation: A Realist Critique of the Latest Liberal Institutionalism.’ *International Organization* 42(3): 485-507.

¹² Liberals tend to emphasise cooperation over competition in international relations. For example, see Keohane and Martin. 1995. pp.45-6. For a useful survey of the literature on realist and liberal attitudes to cooperation see Robert Jervis. 1999. ‘Realism, Neoliberalism, and Cooperation: Understanding the Debate.’ *International Security* 24(1): 42-63.

¹³ Alexander Wendt. 1992. ‘Anarchy is what states make of it: The social construction of power politics.’ *International Organization* 46(2): 391-425, pp.392-393. See also Uwe Hartmann. 2002. *Carl von Clausewitz and the Making of Modern Strategy*. Germany: Books on Demand, p.19.

¹⁴ Wendt. 1992. pp.394-395. This is echoed by Robert Powell. 1994. ‘Anarchy in international relations theory: the neorealists-neoliberal debate.’ *International Organization* 48(2): 313-344, p.314.

¹⁵ Claims that anarchy has an inherent ‘logic’ of its own can be found in Barry Buzan, Charles Jones and Richard Little. 1993. *The Logic of Anarchy/ Neorealism to Structural Realism*. New York: Columbia University Press. Partly in response to Buzan, Jones and Little’s claims, Wendt published Alexander Wendt. 2003. ‘Why

behaviours claimed by both realists and liberals emerge not from anarchy itself but from processes and interactions in which anarchy plays only a permissive, not causal, role.¹⁶ Thus, we find that no matter the theoretical perspective adopted by international relations scholars – be they realists, liberals or constructivists – anarchy remains a base for explaining interactions and a defining feature in the international domain.

It is the purpose of this paper to suggest that this assumption of anarchy limits the analysis of international affairs by international relations scholars. This paper will argue, first, that the international system is not clearly anarchic. Instead, it will be suggested that the system is complexly interdependent, sensitive to initial conditions and particularly sensitive to small both at and below the international level. It will be argued that the system is, indeed, not anarchic but chaotic. Secondly, it will be argued that this alternate conception of the international political system has some major implications for the explanation of significant international events. Drawing on this premise, this paper will then offer a case study of the reasons for World War One as an example of the differing explanations that result when one begins from the premise that the system that is anarchic and, alternatively, when one begins from the premise that the international system is, in fact, chaotic. The readily apparent differences between conventional anarchic analysis and the suggested complex, time-sensitive analysis will, it will be argued, allow for better explanations of international interactions and conflict and, if applied in the analysis of other international events, may well prove to provide superior explanation for what occurs at the international level.

Anarchy: Evident or Illusory

Brian Schmidt argues that it is anarchy that has given international relations its “distinct discursive identity” and, noting the arguments already put in the introduction, there can be little doubt that he is correct in this conclusion.¹⁷ While traditional political science concerns itself with the theory and practice of political interactions in a bounded political space, international relations scholars concentrate on the unbounded, anarchic domain of the international system. For many such scholars, that this system is anarchic is never in question: it is more a background condition which is accepted without question, allowing theorists to

a World State is Inevitable: Teleology and the Logic of Anarchy.’ *European Journal of International Relations* 9(4): 491-542.

¹⁶ Wendt. 1992. p.403.

¹⁷ Brian C. Schmidt. 2006. ‘On the History and Historiography of International Relations.’ in *Handbook of International Relations*, edited by Walter Carlsnaes, Thomas Risse and Beth A. Simmons. London: SAGE, pp.3-22, p.12.

move straight to the discussion of anarchy's construction and implications.¹⁸ But is this truly the case? Is it possible that the international system only *appears* anarchic and, in fact, is something entirely different?¹⁹ To answer these questions, however, this paper begins by outlining how anarchy at the international level is described and the particular connotations of the term within the discipline of international relations.

The term 'anarchy', in popular discourse, implies some sort of chaos. Thus, *The Oxford Dictionary and Thesaurus* defines anarchy as "disorder, especially political or social".²⁰ While it is true that an anarchic international system can be disorderly, it is not *necessarily* disorderly. Indeed, it is more common for international relations scholars to discuss international *order* than to discuss international *disorder* under anarchy.²¹ Within the discourse of international relations, anarchy does not imply a lack of order but a lack of overarching authority; that is, the interactions of international actors are not constrained by a more powerful force.²² Unlike, for example, interactions within a nation-state that may be constrained by the threat of police sanctions or by legal and moral norms, interactions at the international level are essentially unconstrained.²³ Thus anarchy in international relations refers more to the orientation of the system, the nature of the system and the background to the interactions that take place.

At first impression it seems that the international system is indeed anarchical. While there are certainly and have always been powerful and less powerful states, this by itself does not imply a situation that is any less anarchical.

¹⁸ *Ibid*, p.9; Young Jong Choi and James A. Caporaso. 2006. 'Comparative Regional Integration.' in *Handbook of International Relations*, edited by Walter Carlsnaes, Thomas Risse and Beth A. Simmons. London: SAGE, pp.480-499, pp.486-487.

¹⁹ Helen Milner asks a similar question, though she does not deny that the system is anarchic, only that there are other qualities – including interdependence – that are more important than anarchy. See Helen Milner.1991. 'The Assumption of Anarchy in International Relations Theory.' *Review of International Studies* 17(1): 67-85.

²⁰ Frank Abate (ed.). 1996. *The Oxford Dictionary and Thesaurus*. New York: Oxford University Press, p.49.

²¹ See, for example, Kenneth N. Waltz. 1990. 'Realist Thought and Neorealist Theory.' *Journal of International Affairs* 44(1): 21-37; Hedley Bull. 1995. *The Anarchical Society: A Study of Order in World Politics*. New York: Columbia University Press; Christian Reus-Smith. 1997. 'The Constitutional Structure of International Society and the Nature of Fundamental Institutions.' *International Organization* 51(4): 555-589; G. John Ikenberry. 1998. 'Institutions, Strategic Restraint, and the Persistence of American Postwar Order.' *International Security* 23(3): 43-78.

²² Typical is the argument of David Lake: "In anarchy...each possesses full residual rights of control; while constrained by its environment, each state is master of its own fate...". See David Lake. 1996. 'Anarchy, hierarchy, and the variety of international relations.' *International Organization* 50(1): 1-33, p.7.

²³ See John Mearsheimer's take on the sanctioning of lying at the international and the domestic level in John J. Mearsheimer. 2004. *Lying in International Politics*. Paper presented at the Annual Meeting of the American Political Science Association, 2nd – 5th September 2004. On the notion of amorality in international relations see Mervyn Frost. 2001. *Ethics in International Relations: A Constitutive Theory*. Cambridge: Cambridge University Press, p.45.

To be clear, the lack of equality in the distribution of capabilities is a factor at the actor level not at the system level; a system where capabilities are distributed unequally might be hierarchical but it might just as well be anarchical.²⁴ As well, while there are changes in polarity over time, these changes are again at the actor level and not the system level. Thus, the rise of a unipolar power, with relative power far in excess of every other international actor in almost every field of human endeavour, does not make an anarchic system less anarchic. Indeed, as Waltz makes clear, the international system will only change from being anarchic if and when change *of* the system occurs and not simply change *within* the system. In his own words:

[w]ithin-system changes take place all the time, some important, some not. Big changes in the means of transportation, communication, and war fighting, for example, strongly affect how states and other agents interact. Such changes occur at the unit level. In modern history, or perhaps all of history, the introduction of nuclear weaponry was the greatest of such changes. Yet in the nuclear era, international politics remains a self-help arena. Nuclear weapons decisively change how some states provide for their own and possible for others' security; but nuclear weapons have not altered the anarchic structure of the international political system.²⁵

Essentially, Waltz argues, the anarchic international system of today is the same anarchic international system that greeted Thucydides, Machiavelli, Hobbes, Carr and Morgenthau – the significant changes at the unit level (the level of states and international actors), including the development of nuclear weapons, has not been enough to displace anarchy from its system-defining place in the international political system.²⁶

But is the lack of an overarching authority enough to label the system anarchic? There are other systems where no single unit is strong enough to control all others. Consider the meteorological system, which is generally talked about in terms of weather or climate. Here is a system that is composed of 'actors' (or variables) such as pressure, temperature, humidity, cloud cover and sunlight, among many others, none of which has the 'ability' to control all the others. None

²⁴ On this point see Kenneth N. Waltz. 1979. *Theory of International Politics*. Reading: Addison-Wesley: Lake. 1996.

²⁵ Waltz. 2000. p.5.

²⁶ The five scholars mentioned, along with Waltz himself, are generally considered among the most influential of the realist scholars in international political theory. Ariel Colonomos uses the evocative term "cold monsters" to describe states and actors within the amoral, realist world of international relations espoused by these five theorists. See Ariel Colonomos. 1998. 'Diffusion of Ideas and International Relations.' in *The New International Relations: Theory and Practice*, edited by Marie-Claude Smouts, Paris: Presses de Sciences Po, pp.126-139, p.121.

of these elements is more important than the others as a change in one will eventually effect all of the others in some way.²⁷ So, is the global climate anarchic? No: we know that the global climate is very much more complex than a 'simple' anarchy; indeed, meteorologists generally refer to climate and weather systems as chaotic, a term with similar popular connotations to anarchic but, again, with a very specific definition in the context of systems analysis.²⁸

A chaotic system, in the meteorological context, can be defined as a dynamical system that has a sensitive dependence on its initial conditions. The classic metaphor that demonstrates this sensitive dependence is the so-called 'butterfly effect'. As explained by Thiétart and Forgues, the butterfly effect is where "the flap of a butterfly's wing which creates, a few months after, a storm" somewhere else on the planet.²⁹ As the pair explains, small variations – even seemingly insignificant ones such as a butterfly flapping its wings – might have monumental effects on the wider system.³⁰ As such, a chaotic system is complexly interdependent, with every small permutation or 'wrinkle' in the system having the potential to disturb the remainder of the system. Such systems may have no single controlling element but they are *not* anarchic; indeed chaotic systems are infinitely more complex than anarchic systems, such as the one claimed by international relations scholars to exist in the shape of the international political structure.

Is it possible that the international political system is chaotic instead of anarchic? Does a chaotic metaphor better fit the international reality than an anarchic one? If so, it would require a different theoretical understanding of the international relations between states and actors as anarchy, which allows for individual agents to make choices without automatic sanction, would be replaced by a system where the impacts of every decision have the potential to be felt

²⁷ Recognising the difficulties involved in distinguishing between the significant number of variables that might affect weather and climate, meteorologists differentiate between 'basic' atmospheric variables and 'other' variables. Basic variables include temperature, relative humidity, geopotential height, wind speed and wind direction – all others are to be considered 'other' variables. See David J. Stensrud, Harold E. Brooks, Jun Du, Steven Tracton and Eric Rogers. 1999. 'Using Ensembles for Short-Range Forecasting.' *Monthly Weather Review* 127(4): 433-446, p.444.

²⁸ The original work on chaotic climate models is Edward Lorenz. 1963. 'Deterministic Nonperiodic Flow.' *Journal of Atmospheric Sciences* 20(2): 130-141. Today the literature on chaotic effects in meteorology is immense. Examples include AA Tsonis and JB Elsner. 1989. 'Chaos, Strange Attractors, and Weather.' *Bulletin of the American Meteorological Society* 70(1): 14-23; Edward Ott. 2002. *Chaos in Dynamical Systems*. Cambridge: Cambridge University Press; Richard J. Bird. 2003. *Chaos and Life: Complexity and Order in Evolution and Thought*. New York: Columbia University Press, p.8. The classic popular book on the subject is James Gleick. 1988. *Chaos: The Making of a New Science*. London: Penguin. The idea of anarchy being 'simple' is taken from Raymond Hinnebusch. 2002. 'Introduction: The Analytical Framework.' in *The Foreign Policies of Middle East States*, edited by Raymond Hinnebusch and Anoushiravan Ehteshami. Boulder: Lynne Rienner, pp.1-27, pp.1-2.

²⁹ RA Thiétart and B Forgues. 1995. 'Chaos Theory and Organization.' *Organization Science* 6(1): 19-31, p.21.

³⁰ *Ibid.*

across the system. This 'feedback' in the system would mean that even very small events or realities could have the same monumental effects as a butterfly in China causing a storm in Florida.

What evidence points to a chaotic system rather than an anarchic one? To begin with, one could point to the small events that are held, in diplomatic history, to 'spiral out of control' and outside of all expectation. Fred Lawson, for example, outlines a trajectory of just this type in his study of the Iranian crisis of 1945 and 1946.³¹ Jeffry Frieden and David Lake note a similar pattern of feedback and 'spiralling out of control' evident in the international system, drawing on the MAD doctrine as strategic setting in which such spiralling might indeed be possible.³² As well, one could point to events that seem of little significance to agents in one part of the world having an eventually large and perhaps devastating effect.³³ Take, for example, the 2000 US Presidential election in which a matter of only a few hundred votes in a single continental state gave a victory to a candidate whom, it is claimed, was always more likely to invade Iraq than his opponent.³⁴ The lives of tens of thousands Iraqi citizens essentially turned on the actions of a relatively few persons in Florida in 2000 – is not this evidence of massive feedback in a chaotic system rather than an anarchic system experiencing yet another stochastic upheaval?³⁵

Such feedbacks are inevitable in a chaotic system but not necessarily expected in an anarchic one. Indeed, the trend in international relations analysis has, in recent years, been to analyse events at the system level (for example, Waltzian analysis) or some sort of integration of system and unit level events.³⁶ But no analysis has sought to examine events at the individual level of analysis for its

³¹ Fred H. Lawson. 1989. 'The Iranian Crisis of 1945-1946 and the Spiral Mode of International Conflict.' *International Journal of Middle East Studies* 21(3): 307-326.

³² Jeffry A. Frieden and David A. Lake. 2005. 'International Relations as a Social Science: Rigor and Relevance.' *The Annals of the American Association of Political Science* 600(1): 136-156, p. 140.

³³ Such feedback effects are covered in great detail in Chapter 4 of Robert Jervis. 1997. *System Effects: Complexity in Social and Political Life*. E-book edition. Princeton: Princeton University Press.

³⁴ Though it is impossible to say for sure exactly what action a President Gore would have taken on Iraq, speeches and debate suggest he may have chosen an option other than war. In support of this conclusion see Al Gore. 2002. *Iraq and the War on Terrorism*. Speech delivered to the Commonwealth Club of California, San Francisco, 23rd September 2002, viewed 12th April 2006 <<http://www.gwu.edu/~action/2004/gore/gore092302sp.html>>; Joe Lieberman and Al Gore. 2002. 'Should We Go To War With Iraq?' *World & I* 17(12): 38-43; David Masci. 2002. 'Confronting Iraq: The Issues.' *The CQ Researcher* 12(34): 795-802, p.797, p.802.

³⁵ As of 12th April 2006 the NGO IraqBodyCount reported between 34 030 and 38 164 civilians had been killed following the invasion by the 'Coalition of the Willing'. IraqBodyCount. 2006. *IraqBodyCount.net*, viewed 12th April 2006, <<http://www.iraqbodycount.net/>>.

³⁶ This is essentially the neorealist-neoliberal debate, which in many ways dominated the discipline in recent years.

larger effects on the international system.³⁷ Such a move would be fraught with difficulties, of course: if the analysis of interactions between a system and some 200 state actors is yet to provide any real predictive power for international relations scholars, and very little discipline wide acceptance of explanative analysis, then attempting to analyse the interactions of billions of individuals with their states, corporations, international institutions, NGOs and the system itself is likely to seem impossible. However, to be clear, if the system is not anarchic, then analysing events as if it *is* anarchic opens up the possibility of erroneous conclusions, poor explanations and fallible predictions.³⁸

The Nature of Chaos

If we imagine the international system as chaotic and not anarchic, we must also admit that this will have significant implications for our analysis and base assumptions. Indeed, as has been seen in meteorology, a revised understanding of the system mean that all assumptions based on the nature of the previously assumed system will need to be reviewed and, perhaps, overhauled.³⁹ It is the purpose of this section to identify some of the expectations and implications of assuming a chaotic system, particularly those that differ from those arising from the 'normal' anarchic system. Though the differences are many, there are three that will be highlighted here: the complex, time sensitive dependence of the system, and the importance of seemingly minor permutations within the system and the impossibility of long-term prediction.⁴⁰ Dealing with each in turn, it will be shown that a chaotic international relations system is not only conceptually and intellectually different to the system as it is imagined today, but also *fundamentally* and *essentially* different with regards to what is expected of an anarchic one.

³⁷ This should be distinguished from analysis in the style of the 'Great Man of History' that remains, particularly in popular accounts of history and historical conflicts, a fashionable approach.

³⁸ This is not necessarily so. Consider the analysis of other systems, for example economic interactions and global financial systems, where assumptions about actors are made on the basis of ideal types which likely do not exist. 'Economic man' is a useful tool despite the fact that he does not exist in any real shape or form in reality. However, there remains the possibility that analysis based on incorrect information and assumptions is likely to be in error, just as much economic analysis, explanation and prediction in the end proves to be wrong.

³⁹ On this revolution in meteorological theory see Michelle Young, 2002. 'Chaos All Around: Butterflies, Demons, and the Weather.' *Harvard Science Review* (Winter 2002): 29-32, p.30. Broader discussion of the paradigm shifts in meteorology and other scientific fields can be found in David Aubin and Amy Dahan Dalmedico. 2002. 'Writing the History of Dynamical Systems and Chaos: *Longue Durée* and Revolution, Disciplines and Cultures.' *Historia Mathematica* 29(3): 273-339.

⁴⁰ These three elements are common to all chaotic systems. For interdisciplinary examples of such properties in other chaotic and complex systems see Thièrtart and Forgues. 1995; Troy Shinbrot. 1995. 'Progress in the control of chaos.' *Advances in Physics* 44(2): 73-111; JC Sprott and Stefan J Linz. 2000. 'Algebraically Simple Chaotic Flows.' *International Journal of Chaos Theory and Applications* 5(2): 1-20.

The first of the differences to be highlighted concerns the notion of complex time-sensitivity to events occurring within the system. In a chaotic system the precise time and nature of events makes a significant difference to the result within the wider system. For example, a difference of only a few thousandths of a degree in a temperature reading can have significant impacts on the behaviour of a weather system some weeks or months in the future.⁴¹ Though the system is deterministic – that is, it follows simple rules – it is so sensitive to changes in conditions that prediction becomes almost impossible. To take an example at a less abstract level, consider a typical ten day forecast by a television weather service. While it would be normal to consider the first and second days forecasts as likely to be nearly correct, few people would place great trust in the predictions for the ninth or tenth days.⁴² The reason why the trust is misplaced is because of human experience with weather forecasts, but the reason the forecasts are wrong is because of the small permutations that impact upon the ability of the forecaster to predict the system under study.

Edward Lorenz identified this systemic quality in conducting experiments on a very basic modelling system in which three simple non-linear equations formed the boundaries of 'climate'. Despite entering figures within one one-thousandth of being exactly correct, Lorenz found that the climate models he produced varied extensively over the longer term.⁴³ Such variation is typical of chaotic systems and – if the international system is imagined to be chaotic – then we should expect similar sensitivity to small elements within the system to have increasing effect on the wider system over time.⁴⁴

Secondly, the importance of unit or individual level events in a chaotic system cannot be underestimated.⁴⁵ What seems at face value unimportant may have far reaching effects on the wider system and may impact greatly on actors or agents that might usually ignore such matters.⁴⁶ Again, the metaphor of the

⁴¹ This is precisely the problem that, with its emergence, convinced Lorenz that his climatic model might be chaotic. See Gleick. 1998; Sprott and Linz. 1995, pp.1-2.

⁴² Naomi Oreskes. 2000. 'Why Predict? Historical Perspectives on Prediction in Earth Science.' in *Prediction: Science, Decision Making and the Future of Nature*, Daniel Sarewitz, Roger A. Pielke, Jr. and Radford Byerly, Jr. (eds.) Washington, DC: Island Press, pp.23-40, p.36.

⁴³ See Gleick 1998, p.17 for further elaboration on Lorenz's experiments with his climate model.

⁴⁴ There has been previous suggestion that the international system might indeed be chaotic. Diana Richards investigated the quantitative data sets of George Modelski and William Thompson and found that the rise and fall of the great powers over the centuries of European and American hegemony was, indeed, chaotic in nature. See Diana Richards. 1993. 'A Chaotic Model of Power Concentration in the International System.' *International Studies Quarterly* 37(1): 55-72. For the original data see George Modelski and William R. Thompson. 1988. *Seapower in Global Politics, 1494-1993*. London: Macmillan Press.

⁴⁵ Young 2002.

⁴⁶ *Ibid*, p.32.

butterfly effect is useful to illustrate this point: for all the information that is gathered on pressure, temperature, tides, wind speed and direction, daylight hours, humidity and cloud cover, there is no data gathered on the habits of butterflies.⁴⁷ Though we know it is possible for such unit level effects to have significant system level impacts, it is either impractical or impossible to collect and analyse such data. In effect, our models are never truly complete and, therefore, never truly correct.⁴⁸

It must be noted, however, that not every butterfly creates a distant storm every time it moves from flower to flower.⁴⁹ Should this be the case then there would be no stability at all within the climatic system and even short-term predictions – for example, the likelihood of rain tomorrow – would become impossible. Thus, it should be noted, that just as these small events can impact on the wider system in significant ways, they could also *not* impact on the system in significant ways. There is no compulsion implied, only possibility which, in turn, ensures that the chaotic system is sometimes driven by these tiny events and, at other times, does not react at all, despite being faced with perhaps millions of such small interactions at a time.

Finally, in a chaotic system we would expect that long-term prediction is not only unlikely but also truly impossible. Again returning to the example of the chaotic climate system, it is clear that short-term prediction is possible. After all, most meteorologists can predict with reasonable accuracy the weather for the following day and, in reality, many laypersons can do the same.⁵⁰ In the medium term, prediction is less likely to be correct, though it would still be most likely correct to claim that there will be a significant difference in temperature between January and August even if the exact difference is unknown. In the long-term, however, it is impossible to predict the chaotic climate outside of such general rearms as 'summer will be warmer than winter' or 'there will be more snow in Switzerland than the Sahara'.⁵¹ The multiplication effect of billions of unit and system levels events leads to a situation where the future is unpredictable in all but

⁴⁷ Excluding the work of lepidopterists, that is.

⁴⁸ As Henri Poincare points out, "Small differences in the initial conditions produce very great ones in the final phenomena." in Marissa P. Justan. 2001. *The Butterfly Effect = Chaos Theory*. Speech delivered to the Philippine Society of Youth Science Clubs, Cebu City, The Philippines, 4th April 2001.

⁴⁹ In a similar vein, Freud noted: "Sometimes a cigar is just a cigar". In chaos, sometimes a seemingly small and insignificant event is exactly that: small and insignificant.

⁵⁰ There is indeed some meteorological truth to the folk saying, "Red sky at night, shepherds delight. Red sky in the morning, shepherd's warning".

⁵¹ A parallel prediction in the international relations system might be something like 'North America will still be further north than South America'. Of course, this is (very) likely to be true but it is not necessarily very useful information.

the most general terms – something useless to, say, a fisherman wanting to know whether some weekend will be rainy in some future time and place.

A chaotic international system would exhibit similar traits. Long-term prediction would prove impossible outside of general terms. While short-term prediction and even medium-term prediction would remain of some utility (for example, 'next week the US will still be the world's leading power') long-term prediction will be impossible and such predictions are just as likely to be wrong as right (for example, 'the US will be the world's leading power in 2100'). Perhaps some correlations can be drawn between the predictions of pundits at the dawn of the 20th century – who imagined that the Concert of European powers would reign in peace and authority for years to come and the situation at the close of that same century: Russia collapsed, Germany peaceful, Japan demilitarised, the US in power, China rising, the UK and France with mere memories of domination and Austria-Hungary ceasing to exist as an entity at all.⁵²

It would seem, then, that there is at least a case to be made for the international system being a chaotic one rather than an anarchic one. With the implications of chaos including the three mentioned above, it is clear that the analysis, explanation and prediction of international affairs by international relations scholars must also evolve with this changing concept of the system. Thus, let us turn to an example from within Central and Eastern Europe from the last century in order to demonstrate the difference between anarchic and chaotic interpretations of the international system. This paper turns, then, to the debate on the reasons for the outbreak of World War One.

The Origins of World War One: A Conventional Account

This paper will regard as 'conventional' accounts of the origins of the First World War those which attach significance to the sorts of matters with which usual, anarchic interpretations of international relations, that is, matters of states and state interactions. Conventional accounts would include, for example, Austrian Chief-of-Staff Conrad von Hötendorff's pronouncement that:

...the First World War came about inevitably and irresistibly as the result of the motive forces in the lives of

⁵² One historian writes that in 1906 when US Ambassador to Britain, Whitelaw Reid, gave a speech entitled 'The Greatest Fact in Modern History' on the topic of the rise of the United States, it was not at all obvious to the audience that this was either the greatest fact or even an act at all. See RA Mundell. 2000. 'A Reconsideration of the Twentieth Century?' *The American Economic Review* 90(3): 327-340, p.327. See discussion on the effects of the First World War on the major powers of the world in Paul M Kennedy. 1984. 'The First World War and the International Power System.' *International Security* 9(1): 7-40, pp.30-37.

states...like a thunderstorm that must by nature discharge itself.⁵³

Such accounts often rely on interpretations of the Grand Alliances that dissected Europe at the time of the outbreak of war in the Balkans. The most common sees Austria-Hungary drawn into conflict with Serbia; Russia mobilising to assist Serbia; Germany moving to support Austria; France, bound by treaty to Russia, moving to counter Germany; and Britain moving to support neutral Belgium and, in some interpretations, France.⁵⁴ As historian Richard Lebow notes, reasons for the inevitability of war in the anarchic system of the early 20th century range from “social Darwinism, [to] nationalism, the alliance structure, and shifts in the balance of power”.⁵⁵ Such terms resonate with not only historians but also international relations scholars: the ‘balance of power’ thesis and alliance politics remain central concepts in the realist and neorealists paradigms of international relations theory.⁵⁶

But such accounts also attach causal significance to these large factors – the alliances, the balancing – and little, if any, attention is paid to events or factors at the individual level of analysis. Thus, the importance of the Triple Entente is highlighted while local terrorist operations in Serbia are marginalised; the Germany/Austria-Hungary pact is brought to the fore while the interpretation by individuals of their responsibilities under such a pact are often left unexamined.⁵⁷ While the scale of the conflict had never been seen before (and, in some ways, has not been seen since), it would seem that international relations analysts have taken it upon themselves to also consider only the grand interactions that, in an anarchic realm, are the only ones that are held to matter anyway.⁵⁸ Thus, it is clear

⁵³ Quoted in Richard Ned Lebow. 2000a. *Franz Ferdinand Found Alive: World War One Unnecessary*, viewed 12th April 2006, <http://www2.hu-berlin.de/gesint/lehre/2002_2003/counterfact/lebow_wk1.pdf>, p.2.

⁵⁴ Such accounts are standard in the international relations literature, painting a picture of inevitable war brought on by alliance politics. Prototypical examples include: Organski. 1967, pp.202-203; Robert Gilpin. 1981. *War and Change in World Politics*. New York: Cambridge University Press, pp.200-201; F.H. Hinsley. 1995. ‘The Origins of the First World War.’ in *Decisions for War*, edited by Keith Wilson, New York: St. Martin’s Press, p.4. See

⁵⁵ Richard Ned Lebow. 2000b. ‘Contingency, Catalysts and International System Change.’ *Political Science Quarterly* 115(4): 591-616, p.592.

⁵⁶ The ‘balance of power’ literature is immense. Diverse examples of this literature can be found in Stephen M. Walt. 1985. ‘Alliance Formation and the Balance of World Power.’ *International Security* 9(4): 3-43; R. Harrison Wagner. 1986. ‘The Theory of Games and the Balance of Power.’ *World Politics* 38(4): 546-576; Han Dorussen. 1999. ‘Balance of Power Revisited: A Multi-Country Model of Trade and Conflict.’ *Journal of Peace Research* 36(4): 443-462.

⁵⁷ Jack Levy attempts to counter the common claim that alliances lead to war in Jack S Levy. 1981. ‘Alliance Formation and War Behavior: An Analysis of the Great Powers, 1495-1975.’ *The Journal of Conflict Resolution* 25(4): 581-613.

⁵⁸ There remain exceptions, of course. Bruce Russett lists many factors as contributing to the outbreak of World War One but the smaller, immediate events that spin out of control are labelled only ‘surprises’ and not ‘real’ causes. In doing so, Russett implies that such small matters have some importance in the beginning

that the standard explanation for the beginning of the First World War is mainly concerned with Great Power Politics, entangling alliances and a feeling of inevitability. In an anarchic system, where conflict is expected to be inevitable, this is to be expected.⁵⁹ But imagining a system that is chaotic instead allows the analyst to draw different conclusions, even to suggest that the war might not have been inevitable after all.

The First World War in a Chaotic System

What would be different in an analysis of the beginnings of World War One if the international system is assumed to be chaotic instead of anarchic? How much difference would it make to the explanation of the occurrence of the War and would it shed light on any issues that the conventional explanation does not? This section of the paper will address these questions in turn, showing by the time of its conclusion that the chaotic explanation is indeed different, the reasons for the war's occurrence are indeed very different and that it provides far more illuminating treatment of the interdependencies that are the characteristic of both the pre-World War One system and the modern globalised system of today.

To begin with, a chaotic analysis would begin by paying less attention to the usual 'big' causal factors outlined above – for example, the alliance politics and power balancing of the great European rivals – and instead search for small, unit or agent level realities that can be seen to have had a significant effect on the wider system. For example, consider the assassination of Archduke Franz Ferdinand of Austria-Hungary in Sarajevo on the 28th of June 1914. The Archduke was only in Sarajevo for reasons of protocol, having arrived in Bosnia with the main mission of overseeing troop movements in the region.⁶⁰ He travelled with his wife in an open car and – after surviving one unsuccessful assassination attempt in the morning – died in a successful second attempt just before midday. But what of this second attempt? History holds that it was only a wrong turn by a confused chauffeur that put the Archduke and his wife anywhere near the assassin who eventually killed them. Could the lives of millions in World War One really have hung on the driving skills of a single man?⁶¹

of the war but he does not attribute cause to them as one might in an a chaotic system. See Bruce M. Russett. 1962. 'Cause, Surprise, and No Escape.' *The Journal of Politics* 24(1): 3-22, pp.7-9.

⁵⁹ Waltz. 1979; Mearsheimer. 1990.

⁶⁰ Michael Duffy. 2001. *Who's Who: Archduke Franz Ferdinand*, viewed 14th April 2006, <<http://www.firstworldwar.com/bio/ferdinand.htm>>.

⁶¹ Indeed, such questions haunt security scholars. Consider this from an editorial in *International Security*: "Though distant in time, the disaster of 1914 continues to haunt the contemporary security debate. In the nuclear age, the images that remain from the summer of 1914 – **the escalation from an isolated event in a far corner of Europe to global war, the apparent loss of control of the situation by key decision-**

In a chaotic system, such seemingly insignificant events are *exactly* what determine the outcomes, even ones as devastating as the Great War. But consider not only this single event but also all of the others that were involved in putting the Archduke in Bosnia that day. Firstly, had his closer-to-the-throne relative not died, it would have been unlikely that the Ferdinand would have even been sent to Bosnia to review the troop exercises. Indeed, when he was born it seemed that there seemed little chance that Franz would ever be close to being heir to the throne, let alone be groomed for the crown, as he was when he died. Secondly, had his political views not been so widely misinterpreted outside of his own empire, it would seem that he would be an unlikely target for the Black Hand group. Thirdly, had he not chosen to visit Sarajevo on the feast of St Vitus – a day on which the local Serbians traditionally take part in patriotic observances – the Archduke might not have been targeted at all.⁶² Fourthly, as the Archduke's wife, Sophie, was not accorded the respect in Austria-Hungary a woman in her position would normally expect (owing to her parentage and 'station' in life with the time they were married) then Ferdinand would not have had to leave Austria-Hungary in order to fete her in public for their anniversary. Whereas at home it would not be normal for the heir to parade with his wife in public, in Bosnia, far from home, it was completely acceptable. Thus, to celebrate their anniversary, the couple set to the streets of Sarajevo together, an action that might not have occurred had the Archduke been able to parade his wife in Vienna.

Thus, we see that some distinctly sub-system events conspired and interacted to place the Archduke in the firing line of Gavrilo Princip, the assassin who finally took the lives of the couple. A few small changes in the historical, cultural or social realities of the time would have seen either a completely different series of events lead up to the war or, perhaps and more interestingly, the war not

makers, the crowding out of diplomacy by military exigencies, the awful, protracted, often senseless slaughter on the battlefield – raise troubling doubts about our ability to forever conduct affairs of state safely in an international environment plagued by the ever-present risk of thermonuclear war” (bold added). Such escalation, or feedback, and the ‘apparent’ loss of control can be interpreted as signposts of a chaotic system. *International Security*. 1984. ‘The Great War and the Nuclear Age: Sarajevo after Seventy Years.’ *International Security* 9(1): 3-5, p.3.

⁶² The entry of the Archduke to the region on St Vitus' Day was interpreted as an insult to the Serbs. See Michael S. Neiburg. 2004. *Warfare and Society in Europe: 1898 to the Present*. New York: Routledge, p.27. Also, though she finishes with placing the blame for the outbreak of war on Germany, Bernadotte Schmitt does note the significance of St Vitus' Day in Serbia and in motivating the Black Hand. Bernadotte Schmitt. 1952. ‘The Origins of the War of 1914.’ *The Journal of Modern History* 24(1): 69-74, p.71. Other authors who allude to the significance of this day for nationalist Serbians – both historically and in more recent times – include: Fred Singleton. 1989. *A Short History of the Yugoslav Peoples*. Cambridge: Cambridge University Press, p.47; Michael A. Sells. 1996. *The Bridge Betrayed: Religion and Genocide in Bosnia*. Berkeley: University of California Press, pp.44-45.

occur at all. Some would say that these are simply the musings of someone with an interest in the 'what ifs?' and 'but ifs?' of history – but in the chaotic realm it is the what-ifs and but-ifs that, in interacting, define the system. The little things in a system *do* matter and actors *should* sweat the small stuff. Unlike an anarchic system where nobody is in control, everyone in a chaotic system is in control and every interaction can affect every other.

Conclusion: The Utility of the Chaotic System Metaphor

Imagining the pre-World War I system as chaotic not only allows the analyst to see the impact that small events have on a wider system, it also instructs us in the failures of those who attempted to analyse the happenings of the time. With a concentration on events at the national or international level, few analysts or foreign policy advisors would have had cause to warn the Archduke not to travel to a region that, officially and legally, was part of his domain. With a concentration on the alliances of the continent, people of the time ignored local uprisings and terrorist groups – perhaps in much the same way that, during the Cold War, the great powers ignored an emerging terrorist problem of their own. In a chaotic system the analyst is forced to look beyond the great problems and powers else he or she is likely to miss the 'little things' that eventually shape the world and, in this case study, the greatest conflict humankind had known to that point in global history.

The origin of World War One remains one of the most contested questions in international political and military history. Some continue to point to the inevitability of the conflict, resorting to theoretical support from realists and neorealists who maintain that, under anarchy, war is likely and often just a matter of poor balancing by states. But a focus on the large matters in international relations has not helped to explain the modern international system, nor predict major events such as the collapse of the Soviet Union or the falling of the Berlin Wall. Unit or individual level analysis would have helped to predict and explain these events, but only when the individual level interactions are considered important enough to affect the entire system. Thus, the same seemingly insignificant matters – a small group of terrorists in a Soviet occupied Afghanistan, for example – arise time and again. And, time and again, we are surprised that such small matters can have such a significant impact on the entire system. As Richard Lebow argues, "what made Europe ripe for war was not the multitude of its alleged causes but the pattern of interaction between them" – assuming a chaotic

system allows the analyst to focus on the effects of such interactions, an option not open to those who base their analysis on an anarchic model.⁶³

It is the argument of this paper that this is unlikely to change while international relations persists with the notion that the international system is anarchic when, it would seem, there is at least a chance that it may be something else. The example of the beginning of World War One is simply a pertinent case study where a series of small matters – the date of arrival in a hostile Serbian area and the woman the heir to the throne fell in love with, for example – combine to bring about an event so massive that it became known as ‘The War to End All Wars’. Without a new paradigm, international relations will continue to misdiagnose the past, hampering its ability to explain the present and, one day, predict the storms which sweep the system as we know it today.

⁶³ Lebow. 2000a, p.3.

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