Progress and its problems in the study of war

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I. Introduction

Developments in technology and society have changed the face of modern warfare. The twentieth century has witnessed wars of appalling destructiveness, global warfare and several local wars. Today war, together with the environmental issue, comprises one of the single greatest threats to the survival of mankind. Having always been the most injurious form of intercourse among living beings, war in the nuclear age has literally become an 'ultima ratio' as modern weapons of mass destruction place at the command of national leaders the capacity to ruin the arduously acquired achievements of man's physical, social and cultural evolution as it were in one strike. Against this background, it is hardly surprising that many people have come to regard the choice between war and peace as a fatal decision encompassing all of humanity.

Considering the above, it may be somewhat comforting to know that until the present day the decision to go to war appears to have comparatively seldom been taken. Indeed, the frequency of international crises does not correspond to the frequency of wars[1]. And although almost no historical period is without some war, most nations are at peace (or at least not at war) most of the time. Statistically speaking then war constitutes a rare event[2] . Yet wars, like terminal diseases, are ravaging, deadly events ; they strike only a relatively few, but they attract the attention of the many through their tragic and farreaching consequences. For this reason Bueno de Mesquita in all probability comes very close to the truth when he writes[3] :"Perhaps it is because war is both rare and cataclysmic, remote from our everyday lives yet lurking in every exchange between our nation, our friends,

(1) To give an example : of the 278 international crises that Brecher, Wilkenfield and Moser were able to identify in the period 1929-1979, 14 - that is 5% - escalated to full-scale war. Examples are the Spanish Civil War (1936-39), several World War II cases like the Fall of Western Europe (1940) and Pearl Harbour (1941-42), Korean War I (1950) and II (1950-51), Six Day War (1967), October-Yom Kippur War (1973-74). See M. BRECHER, J. WILKENFIELD, S. MOSER, *Crises in the Twentieth Century : Vol I Handbook of International Crises.* Oxford, 1988, pp. 138-139.

(2) Compare with J.D. SINGER, Accounting for International War : The State of the Discipline. In : *Journal of Peace Research,* 1981, no. 1, p. 3.

(3) B. BUENO DE MESQUITA, *The War Trap.* New Haven, 1981, p. 1.

and our enemies, that its causes have so fascinated and exasperated philosophers, historians, social scientists, journalists, and laymen."

Probably, the above also sheds some light as to why there is no paucity of hypotheses concerning war. In the vast existing literature, everyone, whether theoretical, empirical or metaphysical in bent, whether seeking description, prediction or prescription, is likely to find propositions that somehow meet his expectations. But anyone searching for a general explanation of war, is certain to be frustrated. No elegant theory exists which explains adequately the beginning, evolution, and termination of war. Instead many rival approaches or theoretical perspectives come to the fore in the literature.

Some argue that war is a necessary consequence of the anarchic nature of international politics. With no central authority to maintain order and each state pledged to defend its interests war is the natural outcome of interacting states facing a security dilemma. Others situate the causes of war at the national level, that is, in the domestic structure of states. Thus some forms of social-political organization are held to be more war minded than others. Still others argue that the occurrence of war is related to particular economic systems. And finally, there are those who stress the role of the individual in bringing about war since it is individuals who declare war and also do the fighting.

II. The state of the art

To be sure, our knowledge of war and international conflict has definitely increased. We have a much greater stock of data on war and other serious disputes. These data pertain to different types of war and military confrontation, the effects of alliances on polarization and power, the connection between shifts in power distribution levels and the probability of systemic war, the distribution of wars over time, the relation between different types of polarity and the prospect of stability, the relationship between arms races and the likelihood of war[4]. In addition, we are constantly improving the techniques for storing, retrieving, processing and comparing those data. And comparative research has considerably increased our knowledge about the similarities and differences between classes of international conflict behavior. Scholars are swift to add, though, that the evidence accumulated thus far is by no means conclusive. As Singer, one of the leading scholars in the field of quantitative empirical research into the causes of war, concedes himself[5]: "...it is one thing to achieve a good fit between one's predictive model and the

(4) For an excellent overview of the several findings of the Correlates of War Project and related literature in this regard the reader is referred to J.A. VASQUEZ, The Steps to War : Toward a Scientific Explanation of Correlates of War Findings. In : *World Politics,* 1987, no. 1, pp. 123-132.

(5) J .D. SINGER, Confrontational Behavior and Escalation to War 1816-1980 : A Research Plan. In : *Journal of Peace Research,* 1982, no. 1, p. 39.

observed historical patterns, and quite another to achieve an explanation of that fit."

And yet, it is precisely the search for explanations which is clearly absent in the extant literature on the causes of war. Research on war since the end of World War II has been dominated by studies of a rather ad hoc and largely empirical variety, typically geared to the testing of vaguely drawn hypotheses through the application of sophisticated and powerful analytic tools[6]. The remaining, more discursive oriented studies, on the other hand, are for the most part of the loosely structured kind, typically using historical evidence and empirical data in a mainly illustrative way[7] . On the whole, little effort has been spent on the rigorous deduction of testable propositions from general explanatory principles[8] . However, if we wish to explain empirical phenomena, then our theories need to be axiomized, that is, they must be based on a, preferably small, set of abstract but clear assumptions which permit the derivation of deductions. Maybe an example is in order to illustrate how theory building using the deductive or axiomatic format, can be used to critically examine and improve upon exiting theories. For this purpose I will use the balance of power theory as it is among the most well known and prominent theories in the field of international relations.

III. Theory building using the axiomatic format : an example

The balance of power theory deals with classes of events that go under the heading of war, national survival and ensuing power distributions between interacting states in the international system. Its explanandum then pertains to such phenomena as war, stability, national survival and ensuing power distributions.

Now, the first thing to do when deductively reconstructing a given theory is to ask for the universal assumptions or axioms on which it is based[9]. The universal assumptions of the balance of power theory basically consist of two such propositions :

U.A. (1): As long as there is a relatively equal distribution of power among major actors in the international system an equilibrium will emerge, so that the probability of systemic war tends to be relatively low.

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(6) Cfr. B. BUENO DE MESQUITA, *op. ctt.;* W-D. EBERWEIN, The Quantitative Study of International Conflict : Quantity and Quality ?. In : *Journal of Peace Research,* 1981, no. 1, pp. 19-38.

(7) Two well-nigh classical examples in this respect are the inspired and on the whole rather informative studies by R. ARON, *Paix et Guerre entre les nations.* Paris, 1962 ; G. BLAINEY, *The Causes of War.* London, 1973.

(8) Compare with B. BUENO DE MESQUITA, Toward a Scientific Understanding of International Conflict. In : *International Studies Quarterly,* 1985, no. 2, pp. 121-136, 151-154 ; R.L. SIMOWITZ, B.L. PRICE, Progress in the Study of International Conflict. In : *Journal of Peace Research,* 1986, no. 1, pp. 29-41.

(9) See above all K.R. POPPER, *The Logic of Scientific Discovery.* London, 1980 (tenth revised impression), especially Chapters I and III.

U.A. (2): Whenever a more powerful actor pursues hegemonic policies the remaining powerful actor(s) will ally with actors who are threatened by the former in an attempt to redress the shift in the balance of power.

The universal assumptions of the balance of power theory represent general areas of consensus among scholars in the field. In a way they constitute the hard core of the balance of power theory in its present form, and thus can be granted - at least for the time being - the status of axioms, that is statements that cannot be put to test in any direct empirical manner[10]. One way to critically test the above-stated universal assumptions or axioms is by expanding the hardcore with a protective belt, consisting of additional assumptions or auxiliary statements. These are statements that specify the initial conditions or initial state spaces, and their purpose is to establish the explanatory or predictive success of the universal assumptions under consideration.

If we want to use the above universal assumptions in an explanation of war, stability, national survival, and resulting power distributions between opposing sides, we need auxiliary statements about:

a. the initial power distribution in the system;

b. the foreign policy goals of (the relevant) states in the international system (i.e., whether they aim for a balance of power or hegemony);

c. the foreign policy instruments of (the relevant) states in the international system;

d. the ways in which the actors in the system can affect each other's power;

e. other ways (than d) in which the power of an actor can be affected (e.g. technological change, demographic evolution);

f. the extent of information each actor in the system has regarding the power of all other (relevant) actors; and

g. (additional auxiliary statements.)

In sum, the balance of power theory can be represented by the following deductive scheme:

Balance of Power Theory

Axioms:	[U.A. (1), U.A. (2)]	}	*Explanans*
Auxiliary statements:	[a,b,c,d,e,f,g]		

Explanandum: war, stability, national survival, ensuing power distribution between interacting states.

(10) See above all I. LAKATOS, Falsification and the Methodology of Scientific Research Programs. In: I. LAKATOS, A. MUSGRAVE, *Criticism and the Growth of Knowledge.* London, 1981, pp. 91-196.

With the help of a deductive system of propositions like the above it becomes feasible to examine the state of the art in a given field in a more systemic way, and to indicate in what direction further research should be heading. For example, one may wonder whether propositions U.A. (1) and U.A. (2) are really universal enough to deserve the status of axioms. As we will argue below it might well be that we will have to look for axioms or general explanatory principles at a much deeper or complex level. In any case the scheme that the axioms considered here can only be maintained if (1) they are successful in generating powerful deductions ; (2) no rival system of axioms comes to the fore that turns out to be more powerful.

Furthermore, the scheme draws our attention to the fact that the specification of the auxiliary statements, and especially their mutual interrelationships, is still basically missing in the extant literature. Lacking the appropriate auxiliary statements, we cannot hope to expand the domain of the balance of power theory so that hidden implications or inconsistencies may arise and critical tests performed. Without such tests, however, it is hardly feasible to find out whether the axioms of the theory under consideration are any meaningful at all so that progress will be very difficult indeed.

What this example seems to suggest then, is that without the use of deductive explanatory formats it is much harder if not impossible to discover the deeper and less obvious implications of the set of basic assumptions or axioms by means of which a given theory, i.e. balance of power theory explores reality. More specifically, it is through the process of axiomization that it becomes possible to find out whether a certain theory contains any hidden contradictions. And, only if a theory appears to be internally consistent (i.e. it is not possible to deduce simultaneously 'n' as well as 'ñ' from its axioms) it can yield information or tell us something about possible states of the world[11].

For that reason, it is all the more unfortunate that in the extant literature on war and international conflict attempts at axiomization are very few[12]. This short-

(11) For a thorough treatment of this issue see J.K. DE VREE, Order and Disorder in the Human Universe. Bilthoven, 1990, especially Chapter I.

(12) A notable exception is of course the work of Bueno de Mesquita, proposing an expected utility theory of war (see B. BUENO DE MESQUITA, *op. cit.*). This theory undeniably shows some signs of progress (see e.g. B. BUENO DE MESQUITA, The War Trap Revisited : A Revised Expected Utility Model. In : *American Political Science Review,* 1985, no. 1, pp. 156-163 ; J.D. MORROW, A Continuous-Outcome Expected Utility Theory of War. In : *Journal of Conflict Resolution,* 1985, no. 3, pp. 473-502), but seems to be overly restrictive in its interpretation of the utility principle. What is lacking is a theoretical integration of the utility axiom within a dynamic systems perspective. As a consequence the explanation of systemic factors - and especially their dynamics - has no part in the theory. While the utility theory of war tells us something about calculations of political leaders on the eve of war as well as who is likely to initiate and win wars, it provides us with little information about the underlying (escalation)processes that precede wars. For a very systematic, and

coming surely explains why so many mutually inconsistent propositions and findings stand to live unperturbed side by side. As a result, the level of information produced is not very impressive. An example of one of the more important inconsistencies in the field will help to elucidate this substantial point.

IV. Inconsistencies and low level of information : balance or inequality of power ?

The example stems from the debate about the relative merits of different types of power distribution for the likelihood of stability and peace in an anarchic international system. For one, most advocates of the 'balance-of-power theory' conjecture that the relative equal distribution of power among major actors in the international system leads to an equilibrium, in which war is relatively unlikely[13]. When placed in the context of major or cataclysmic war, the preceding proposition is directly at odds with the 'theory of hegemonic stability' which contends that peace (understood here as the absence of war among the great powers) and cooperation between states come about through the stabilizing impact of a powerful, dominant state[14] . To hegemonic theorists, a peaceful system is a system containing a preponderant power, and is accordingly asymmetric. Rather interestingly, the proponents of each of the above views seem to make a plausible 'empirical' case for their assertions. Adherents of the balance-of-power perspective mostly refer to the experiences of post-Napoleonic 19th-century as evidence for their views, while proponents of the hegemonic power perspective point to the relatively long periods of stability during the *Pax Romana* and the more recent *Pax Americana*.

In recent years, the above two opposing theories have been more systematically tested. The more important of these critical tests have been compared by Siverson and Sullivan[15] . As a basis for the comparison they use the relationship between power concentration and the probability of war. On the basis of their findings it is clear that both theories get empirical support. For one, Ferris obtains results which are supportive of the balance of power theory[16] , whereas empirical research by Organski and Kugler, as well as Bueno de Mesquita seems to corroborate the power preponderance theory[17] . Quite interestingly, research perfor-

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also completely formalized attempt to theoretically integrate the utility principle within a dynamic systems framework the reader should consult J.K. DE VREE, *op. cit.*

(13) See e.g. I.C. CLAUDE, *Power and International Relations.* New York, 1962 ; H. KISSINGER, *The White House Years.* Boston, 1979.

(14) See A.F.R. ORGANSKI, *World Politics.* New York, 1968 ; R. GILPIN, *War and Change in World Politics.* Cambridge, 1983.

(15) R. SIVERSON, M. SULLIVAN, The Distribution of Power and the Onset of War. In : *Journal of Conflict Resolution,* 1983, no. 3, pp. 473-494.

(16) W. FERRIS, *The Power Capabilities of Nation-States.* Lexington, 1973.

(17) A.F.K. ORGANSKI, J.K. KUGLER, *The War Ledger.* Chicago, 1980 ; B. BUENO DE MESQUITA, *The War Trap.* New Haven, 1981.

med by Singer, Bremer, and Stuckey leads to results that uncover an important anomaly : they find that a balance-of-power system is associated with less war in the 19th century but with more war in the 20th, while a preponderance is associated with more war in the 19th and less in the 20th[18].

The question then is : how do this differences in testing results come about ? Siverson and Sullivan[19] suggest that the hypotheses do not hold up well against variations in the specification of the relevant variables. Moreover, positive results seem to be highly data-dependent. As things stand now however, it seems clear that the hypotheses under consideration tend to be disconfirmed in their generality. Still, it might be unwise to abandon these arguments prematurely. As we will argue below these efforts toward testing may have been proceeding from an inadequate theoretical basis. The variables involved are most likely much more complex and more deeply interconnected than has been theoretically understood so far.

V. Why basic research is needed

In all, the argument so far suggests that in spite of a quite respectable number of empirical and other studies on war accumulation of knowledge is not that impressive. We do not as yet have much insight into why and how wars come about, and especially how war as a certain and comparably rare form of conflict regulation is connected to conflict behavior at lower levels of intensity as military disputes and international conflict behavior in general[20] . In other words, we still do not very well understand the mechanisms underlying the origins of the war phenomenon, its persistence and evolution, as well as its complex interrelationships with serious disputes and lower level international conflicts. Without such understanding, however, it is hard to distinguish, explain, and predict different categories of (future) conflicts and their interrelated dynamics.

This situation, i.e. lack of insight into the deeper mechanisms governing international conflict and war, is rather problematic. The main reason for concern is that (world) society develops in ever faster and more complex ways as a result of continual technological innovation and change ; a process that will continue to raise grave problems of behavioral and societal adaptation. As we know all too well from both historical and contemporary political experience, such adaptation is always a rather hazardous affair, liable to run out of hand. Moreover, this liability is all the more probable with regard to the extant international political and eco-

(18) J. D. SINGER, S. BREMER, J. STUCKEY, Capability Distribution, Uncertainty, and Major Power War, 1820-1965. In : J.D. SINGER (ed.), *The Correlates of War. Vol I. Research Origins and Rationale.* New York, 1979, pp. 265-297.

(19) *loc. cit.*

(20) Compare with W-D. EBERWEIN, *loc. cit.;* D.L. SMITH, International Political Processes. In : S.A. BREMER (ed.), *The Globus Model : Computer Simulation of Worldwide Political and Economic Developments.* Frankfurt am Main, 1987, pp. 575-577.

nomic system which, in the absence of any world government or central authority vested with the capability to enforce rules, settle disputes, and maintain peace, has but a low capacity for the effective and efficient (re)solution of any major crisis or serious challenge to the existing structure that may arise within it. Especially in times of rapid and drastic changes, this means that the predictability of social and political interaction shows a tendency to decrease rather rapidly, whereas at the same time, uncertainty and therewith the likelihood of injurious or violent behavior increase accordingly[21].

The above lends relevance as well as urgency to the task of augmenting the level of basic research into the dynamics of violent conflict and war, that is, of research aimed at the development and testing of precisely such theory as is essential for acquiring insight into what underlies the origins and development of these 'deadly quarrels'. Now, to plead for an increase in basic research is one thing. It is quite another to specify the substance of such an effort. In the remainder of this article I will make an admittedly sketchy attempt to do just that by making a few programmatic remarks of which I suspect that they may be essential in bringing about theoretical progress in the study of war[22].

VI. War : An extraordinary phenomenon ?

When studying war we easily incline to treat it as an extraordinary form of behavior, and this is quite comprehensible. As intimated already, statistically speaking war constitutes a rare event. Moreover, it is an exceedingly costly and disruptive form of interaction between people and states. It is also a rather peculiar, not to say : absurd, form of dealing with each other, as it is so very often detrimental to all involved. Indeed, what could be more irrational than warfare or fighting between people or systems, a form of exchange, that is, in which they seriously harm or even destroy each other ? All this does indeed seem to make war into a rather special category of human interaction, quite unlike other forms such as trade and cooperation.

From a theoretical point of view, however, there do not seem to be valid reasons for placing war in a special category, for regarding it as an extraordinary form of interaction. Surely, from a rational point of view people or states should try

(21) See J.K. DE VREE, *Foundations of Social and Political Processes.* Bilthoven, 1984.

(22) The views expressed hereafter are developed within the research program *Order and Disorder in Social Systems* in which the author collaborated with Prof. Dr. J.K. De Vree, Department of International Relations, State University at Utrecht and the Centre for Advanced Research in International Affairs in the Netherlands (CARIAN). A brief description of the program's heuristic, theoretical, and methodological assumptions as well as some major problems in obtaining sufficient resources can be found in J.K. DE VREE, G.J.J. GEERAERTS, *Order and Disorder in Social Systems : A Research Program.* State University at Utrecht : Department of International Relations, 1989. For a thoroughly elaborated, and also mathematically formalized, introduction to the present research program one is referred to J.K. DE VREE, *Order and Disorder in the Human Universe.* Bilthoven, 1990.

and avoid it as much as possible because of its disruptive and destructive effects. Yet, given the fact that people or systems do have the capacity to inflict harm upon each other, it is perfectly understandable that under certain conditions they will be tempted to use that capacity to further their own ends. And, it is equally understandable that interaction between systems or people sometimes creates situations in which some or all concerned come to see the use of violence as an attractive or necessary option. In general, the social process is governed by a certain dynamism of its own which is hardly under the control of the participants themselves. As a result, even among initially friendly, peaceful, and benevolent people or systems, there is always a risk that their behavior toward each other will assume violent forms, up to and including actual warfare. As such war represents a perfectly natural, even though deplorable, outcome of ordinary social processes. Its explanation does not call for the assumption of any special and especially bad or sinister forces, motives, intentions, or proclivities in man. Warfare is the outcome of a complex interplay of relationships between parties, the nature of the system to which they belong, and the evolution of the interaction or process in which they participate [23].

VII. The explanation of war as a hypercomplex phenomenon

Being a natural though relatively rare phenomenon, war, as social systems or processes in general, belongs to the category of phenomena that can be safely put under the general heading 'hypercomplex' systems (which eventually means that they are both complex and dynamic in nature)[24] . Such systems represent, and in their turn belong themselves to complex configurations of parts, factors, or forces, that interact or influence each other mutually, specifically also by means of all sorts of direct and indirect nonlinear feedback relationships. Therefore, the state or conduct of any single part or element is a function of that of (in principle : all) the others. By implication, the analysis of such hypercomplex systems can be anything but an easy matter. Moreover, it seems to be intuitively clear that traditional notions of linear causal relationships and related 'black box' models are hardly suited for a more than superficial analysis of such systems. These notions and models are simply not conceived to discern the internal dynamics of any system, and actually predict the system response without explaining the properties of and connections between system components, the systems structure[25] that is.

(23) See above all J.K. DE VREE, *Order and Disorder in the Human Universe,* Chapter 29.

(24) Technically, I use the term 'hypercomplex' here as it is introduced by J.K. DE VREE, *op. cit.,* pp. 100f. It serves to express that in mathematical terms social phenomena are usually located in multi-dimensional (hyper)space, and that they essentially involve both feedback and nonlinear relationships.

(25) Here and in the rest of this article the term 'structure' refers to the entire set of relationships (as determined or defined by a particular theory) which determines how a state space at some moment, t, is being transformed into another such state space at the

Therefore, their use makes only sense in those cases where one has to deal with (relatively) stable systems. And stability of social systems is not the kind of thing to take easily for granted - most certainly not if one tries to explain, predict or project social and political processes in the longer run. A black box approach, then, only seems plausible with regard to the study of statics (i.e., relationships at a point when change is not occurring); it predicts without explaining or gaining insight into the internal structure of the system, and therefore its applications are limited from an evolutionary perspective [26].

To arrive at a deeper or more fundamental understanding of the evolution of hypercomplex (social) systems or processes, within the context of which war constitutes a perfectly natural, though rare phenomenon, it is necessary to reveal how their state, and eventually their structure, change over time. Indeed, as historical analysis reveals time and again, the actual state of any social system, as well as its structure, are to a large extent determined by their previous state or structure or, more generally, by their past history. Stated differently, social systems are inherently historical[27].

The foregoing has some fundamental heuristic implications for the study of social systems in general, and of war in particular. Foremost it means that there is not so much sense in conceiving such an enterprise as consisting in the search for observable regularities, that is, of invariant relationships at the level of the empirical phenomena themselves. The reason for this is that due to the dynamic or historical nature of the phenomena under study in social science, observable regularities have proved hard to come by. This is certainly no less true as regards war-peace phenomena. Illustrative in this respect is the following remark by Singer[28] : "... the international system is considerably more complex today than in the past, and apparently becoming more so decade by decade. One indicator of this is that the statistical goodness of fit between our postdictive models and the actual historical outcomes is consistently much lower for twentieth century disputes than for the nineteenth century (...) researchers have a far weaker understanding of the dynamics of contemporary international conflict than we do of the simpler epochs gone by... ".

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next moment, t + 1, either under the influence of certain environmental stimuli or disturbances, or under that of its own internal dynamism. A such, one can say that structure describes the internal make-up of a system, usually in the form of more or less complex transformation matrix.

(26) See e.g. Th. BAUMGARTNER, T.R. BURNS, L.D. MEEKER, The Description and Analysis of System Stability and Change : Multi-level Concepts and Methodology. In : T.R. BURNS, Th. BAUMGARTNER, Ph. DEVILLE, *Man, Decisions, Society.* New York, 1987, pp. 223-255.

(27) Cf. among others R. BENJAMIN, The Historical Nature of Social-Scientific Knowledge. In : E. OSTROM (ed.), *Strategies of Political Inquiry.* Beverly Hills, 1982, pp. 69-98.

(28) J.D. SINGER, The Error Term and Accident in Nuclear War. In : *Peace Research Reviews*, 1986, no. 4, p. 63.

Like it or not, the hypercomplex nature of social life allows of little or no valid and non-trivial generalizations indeed. To be sure, as has been suggested earlier, what a system, individual, group, or society, does or does not do, how it responds to any given stimulus or event, is to a significant extent determined by its current state or conduct as the product of its previous historical evolution. This implies both that the development of such a system will be governed by a definite dynamism of its own, and that the very same stimuli or events will usually have rather different effects on different systems.

In brief, the development and conduct of no two systems, be it individuals or collectivities, will be entirely the same, not even when the circumstances in which they find themselves appear to be identical, and the same causes do not produce the same effects. This does surely not signify that scientific inquiry or theory formation about people or social systems were impossible. But it does import that we should conceive such inquiry in a rather more abstract or fundamental fashion than has in all appearance been common up till the present day. In other words: it is to provide us, not with a kind of summary description of empirical reality, a sort of generalization of experience, but with an insight into the mechanisms[29] underlying the change or transformation of the many social phenomena, war and peace being among them. To get a deeper insight in society, and therewith in phenomena of war and peace, we need to know the mechanisms by means of which people or systems generally influence each other's conduct. More specifically: How does the behavior of any actor or system component vary with that of (in principle: all) the others?

Together with the historical nature of all things social, this implies that the explanation or prediction of what people or systems will actually (come to) do to one another, or of the state of the social system at a particular moment, can proceed only by means of a dynamic analysis, as a function, that is, of the time path of change within the social process among them, i.e. the membership of the system. We must address our attention not so much to the behavior of people or systems at some moment, but ask how their behaviour with respect to each other changes, and how these changes produce other such changes. As such their present behavior or state space is but a momentary or transient stabilization of ongoing processes of change.

The preceding argument also sheds some light as to why actual research into the 'causes' of war has been largely unsuccessful. We are at present still far from understanding what causes violence or war, or even such events as the First and Second World Wars, or the Cold War. The main reason for this state of affairs is that the notion of causality itself is only suited for handling rather simple or ele-

(29) In order to preclude any possible misunderstandings, it should be mentioned that the term 'mechanism' merely refers to some set or system of relationships or functions governing the transition of one state space into another. It does not, then, imply anything 'mechanic' or 'mechanistic'.

mentary relationships. As an heuristic device it renders no justice to the fact that real social phenomena constitute dynamic complexes of a varying number of different elements that influence each other mutually in many direct as well as indirect ways. As a consequence, in what way any single one of them behaves, or how it reacts to such stimuli or interferences to which it may subjected, is, in principal, determined by the state of the system as a whole, viz. by the state or behavior of all the other elements.

For instance, in any form of interaction, be it trade or cooperation, or violent conflict, between two or more actors, how any one of them behaves is governed by its expectations regarding the behavior of the other parties. However, this applies to all the actors involved. As a result, what will happen between them flows from an interrelated set of expectations that mutually act upon each other. One might be inclined then, to conjecture that a state of conflict or hostility between people or systems generally would raise the chances of violence between them ; and conversely, that the likelihood of their cooperating peacefully were somehow proportional to the degree of accord between them. Yet, at the same time it seems a safe guess that such hostility or accord is itself influenced by the very probability of violence or cooperation between them, a probability which turns out to be less a matter of their own wishes, than of the prevailing boundary conditions imposed on them by the situation, system, or society of which they are part[30] . Individuals, for instance, obviously do rather different things in conditions of war than in peaceful and more secure social conditions ; they behave differently in anarchic social surroundings than they do in highly ordered and regulated societies.

All this seems also to imply that we will in general not be able to predict what will happen in the future from the mere observation of what happened in the past. Whether an external threat will or will not stimulate internal unity or integration in a political system ; or power shifts in a political system will or will not bring about violence or war, or again, oppression or deprivation will or will not lead to protest and revolution : it all depends on how the initial conditions are filtered through the current state and structure of the systems under consideration.

From this it seems also to follow that what historical analysis reveals with regard to any specific case, system, period, or society, may not simply be projected on other cases, systems, periods, or societies, let alone be used as a basis for present policy making. To give but one example : most analysts tend to agree that British and French policies of appeasement towards Nazi Germany have clearly contributed to the outbreak of the Second World War. However, can we take this to mean that giving in to a growing power will invariably lead to war ?

(30) For a very insightful analysis of these complex actor-system dynamics the reader is referred to T.R. BURNS, TH. BAUMGARTNER, PH. DEVILLE, *Man, Decisions, Society.* New York, 1987.

To do so would surely go much to far. Again : what we need to deal with such questions in a more balanced and informative way is a deeper insight into the mechanisms through which people or systems generally influence each other's behavior. At all societal levels, from the family up to and including world politics, interaction springs from the fact that the actors involved are interdependent. Quite independent of their wishes or intentions, they have the capacity to affect, positively as well as negatively, each other's power (which for the sake of the argument here will be generally understood as an actor's capacity to survive). The mere fact that one actor possesses food or weapons and another not or less so, immediately brings about a relation of mutual dependence. More generally, an actor's power implies the capacity to affect another actor's power, both to support, aid, or strengthen, and to harm, weaken, or injure him. Systems will be inclined to interact then, to the degree that they are interdependent. As De Vree[31] writes : "After all, if and to the degree that systems are dependent upon each other, they can maintain or enhance their power only by making others desist from harming them or by inducing others to support them. When A has the weapons that enable it to kill B, B will obviously survive, that is : maintain its power, only if it is able to induce A *not* to use these weapons. And when A grows the food which B needs, the latter's survival requires it to make the former, A, to provide him with such food. That is to say, people or systems generally will attempt to influence each other's behavior so as to make the other contribute as much as possible to their own power, or desist from harming them. They will do so by offering each other benefits or advantages or by threatening to harm each other, thus making certain forms of behavior more, and others less, probable. Which method they will adopt in fact is governed by their expectations as to what works most effectively against the smallest risks and costs - which is basically a matter of their own insight into, or information about, their own power relative to that of the others."

All this means that, people as well as systems in general must find ways of adjusting to shifts in their mutual power relationships, and in such context appeasing may often turn out to be the only sensible thing to do, viz. bow to the inevitable, and to avoid a costly and useless violent test of strength. Of course, to be able to decide on this the actors involved need the information which permits them to assess what is inevitable, possible, or beneficial - precisely the kind of information which in practice is all too often lacking, especially in the international system.

Apparently, if history is to teach us any lessons, we must look for them at a more fundamental level than that of directly observable relationships. This level, which De Vree[32] depicts as that of the *structure* of things generally, is a much more

(31) J.K. De VREE, On Some Principles of International Politics. In : R.J. GROENINK, *Data on Europe, 1945-1980.* Bilthoven, 1988, p. 12.

(32) J.K. DE VREE, Chaos in Europe - An Inquiry into the Nature of Social Systems and the Methodology of the Social Sciences. In : *Acta Politica,* 1991, no 1, p. 31.

complex one altogether, in the sense that the structure of a system is defined in terms of a (matrix of a) larger or smaller number of different relationships or functions. As such it determines the state transitions of a number of observable magnitudes, and produces quite different (observable) results depending upon the initial state of the system concerned.

In all then, it seems not very fruitful to ask for the causes of violent conflict and war. Instead, the basic query about phenomena of war and peace should read : What are the mechanisms that make for social processes at times to destabilize and escalate to certain levels of injurious interaction (low level conflict, serious disputes, war)? And in the same vain : What mechanisms make a social process stabilize or reach equilibrium, so that more supportive forms of interaction (trade, cooperation) become possible ? The underlying idea then is a vision of war as a certain and one of possible phases in the international political process, concurrently with other injurious forms of interaction as serious disputes and low level conflict behavior, *but* also supportive behaviour like trade and cooperation.

From the point of view of scientific understanding, what precedes also comes down to the necessity of adopting a holistic, unified or 'systems-theoretic'[33] approach to the study of 'hypercomplex' (social) systems. Indeed, in such systems, the state and development of any one component is, in principle at any rate, a function of the state and development of every other component. By the same token, what any such component does, how it behaves or evolves, is determined to a large extent by its position in, and by the nature or evolution of, the whole system of which it is a part. As suggested earlier, people behave rather differently in conditions of war than in a peaceful and secure social setting, and they have rather different expectations regarding the behavior of their fellow men in anarchic social systems than they do in highly ordered and regulated societies. And what the system as a whole does, its state and evolution, is not simply a function of how its components behave, but also of the way these components are arranged, of the system's internal structure or organization.

When studying the dynamics of war and peace we therefore badly need to think in terms of, or at the level of, entire systems. It is imperative to regard specific occurrences of war and peace as being produced by some evolving system as a whole, that is, by a moving complex of a greater or smaller number of interacting forces or factors.

(33) In order to thwart rather common misunderstandings, it should be mentioned that 'systems-theoretic' has no substantial meaning here. It merely serves to emphasize a methodological issue, viz. the explicit recognition of the fact that in social life phenomena are interdependent, are made up of still other phenomena that thus are interdependent, and should therefore be studied as such, or, conversely that there is little sense in studying social phenomena in isolation.

VIII. Some important implications

The preceding assumptions have considerable theoretical and methodological implications for the study of war and peace. From a theoretical point of view, it means that the states and structures on the pertinent system levels (viz. systemic, dyadic, and national levels), come to be seen as the momentary or transient stabilizations (outcomes) of the actions of a number of actors within (usually multiple) interdependent dynamic processes. Hence, an emphasis on social dynamics and complexity calls for different accents in explanation, modelling and testing[34]. The variability of phenomena such as war and peace is seen as the result of different over-time conjunctures of common underlying behavioral mechanisms and processes of interaction (i.e., microscopic level of analysis) occurring within the higher system's structure (i.e., macroscopic level of analysis). Testing of dynamic systems theories thus acquires a clearly 'historical' or 'irreversible' flavour under both controlled conditions (as in computer simulations and experiments where the same dynamic process is replicated across variables and parameters) and uncontrolled conditions (as in the study of the rise and fall of empires[35] , or again in the analysis of processes of state formation[36] or integration[37]). It is the capacity of the hypothesized system or process(es) to produce, predict, and postdict sequences of related classes of events that becomes central to the evaluation and critical testing of a theory.

All this is quite demanding. It calls for a continual awareness of many different relationships at the same time. It conflicts with rather deeply ingrained mental habits, and, in particular, with an anthropomorphic conception of things human and social. And it requires a comparatively high level of methodological sophistication. In this connection Kirkpatrick and Widmaier point to the necessity of formalization[38].

As a consequence of the complexity of the subject under consideration the thrust of an argument is more often than not dependent on the accurate specification of the complex interrelationships involved. They also argue that formalization means much more than writing FORTRAN statements or regression equations. It involves the mathematical formalization of whole systems of equations, an under-

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(34) See among others R. HANNENMAN, Computer-Assisted Theory Building. Newbury Park, 1988.

(35) An example of an inspiring study in this respect is P. KENNEDY, *The Rise and Fall of Great Powers.* New York, 1987.

(36) See e.g. Ch. TILLY, *The Formation of National States in Western Europe.* Princeton, 1975.

(37) A fine study in this connections is M. JANSEN, J.K. DE VREE, *The Ordeal of Unity. The Politics of European Integration, 1945-1985.* Bilthoven, 1985.

(38) G. KIRKPATRICK, U. WIDMAIER, Linking Islands of Theory and Technique in Political Economy. In : M.D. WARD (ed.), *Theories, Models, and Simulation in International Relations.* Boulder, 1985, p. 135.

taking that necessarily leads to questions of logical or internal consistency and equilibrium. If we are to analyze and understand (hypercomplex) social systems beyond the black box level, clearly new approaches and techniques are imperative. A most inspiring attempt in this regard is De Vree[39].

Moreover, the preceding argument also seems to imply a considerable relativization of the common idea that science consisted of the invention and subsequent testing, falsification, and revision of all sorts of hypotheses. With respect to the kinds of systemic phenomena with which we are dealing here, however, single hypotheses and the results of their testing do not mean terribly much. Briefly, the meaning of any single idea or test result is highly dependent upon a larger or smaller number of other conditions and results, or upon the nature of the systemic and theoretical context involved as a whole : one does not so much test a hypothesis as a theory about the evolution of some system as a whole.

To do so, requires of course a highly integrated and formalized, 'operationalizable' theory to begin with. Yet, even when such a theory is indeed given, which is clearly not the case in the field under consideration, its application to concrete cases typically raises the need for a considerable, and usually very much underestimated, amount of further theoretical inquiry, aimed at the development of more or less operational subtheories or the invention of further more specific hypothesis so as to allow of the theory's interpretation, specification, and application in the concrete case chosen : the distance between even the most highly developed of theories and empirical reality always tends to be rather larger than expected.

IX. Conclusion

Although our knowledge of war and international conflict has definitely increased, we do not as yet have much insight into why and how wars come about, and especially how war as a certain and comparably rare form of conflict regulation is connected to conflict behavior at lower levels of intensity as military disputes and international conflict behavior in general. Theoretical progress in the study of war demands a significant effort at the level of basic research. It is imperative that we spend more energy at the rigorous deduction of testable propositions from general explanatory principles or mechanisms. For such an endeavour to succeed it is essential to adopt both a dynamic and systems-theoretic perspective. This means that the war phenomenon is placed within an evolutionary or dynamic as well as unified or systems-theoretic point of view, specifically implying a vision of war as a certain and one of possible phases in the international political process, concurrently with other injurious forms of interaction as serious disputes and low level conflict behavior, *but* also supportive behavior like trade and cooperation. Although war may be rare and tragic, it nevertheless constitutes a 'normal' event.

(39) J .K. DE VREE, *Order and Disorder in the Human Universe.*

There is no need to regard it as an extraordinary form of interaction, the explanation of which demands distinct explanatory principles. War, no less than other (hypercomplex) social phenomena such as peace and cooperation, is the result of different over-time conjunctures of common underlying behavioral mechanisms and processes of interaction occurring within the higher level system's structure. Yet, if we are to analyze and understand the war phenomenon from this perspective, clearly more formalized approaches and techniques are imperative.

Summary: **Progress and its problems in the study of war**

Although the knowledge of war and international conflict has definitely increased, we do not as yet have much insight into why and how wars come about, and especially how war as a certain and comparably rare form of conflict regulation is connected to conflict behavior at lower levels of intensity as military disputes and international conflict behavior in general. Theoretical progress in the study of war demands a significant effort at the level of basic research. It is imperative to spend more energy at the rigorous deduction of testable propositions from general explanatory principles or mechanisms. For the success of such an endeavour it is essential to adopt both a dynamic and systems-theoretic perspective. This implies a vision of war as a certain and one of possible phases in the international political process, concurrently with other injurious forms of interaction as serious disputes and low level conflict behavior, but also supportive behavior like trade and cooperation. Yet, if we are to analyze and understand the war phenomenon from this perspective, clearly more formalized approaches and techniques are imperative.