

Establishing a theoretical framework to discuss war in terms of causality

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In this article the author addresses the problem of causality in war. First he introduces Hume's and Clausewitz's thoughts on causal relationships then he displays the semantic problem inherent in such an approach. In order to discuss the obstacles and opportunities of a causal focus he proposes a theoretical framework of his own to better understand war in terms of ends/means relationships. To make a proper analysis the author suggests two domains along which it becomes possible to understand the spatial and temporal consequences of causality. He concludes that with a causal focus we establish a scientific image of war composed of a network of causal processes and interactions. This however, has similarities with the Jominian rather than the Clausewitzian image of war.

Causality and Clausewitz

The Scottish philosopher David Hume understood causality as “such a connexion, as to give us assurance from the existence or action of one object, that [is] follow'd or preceded by any other existence or action; nor can the other two relations be ever made us of in reasoning, except so far as they either affect or are affected by it”.¹ Causality meant for him a subjective judgment, a mental act of association, a forced categorization. Thus causal relationships were nothing more than the result of inductive reasoning imposed upon events and occurrences. In book two, chapter five of *On War* Clausewitz also tried to explain the problem of causality. As he emphasised facts and the underlying motives are seldom fully known in war, which makes the deduction of effects from their causes difficult. Due to intentional concealment or improper recording effects do not always come from known causes and there are always gaps in causal assumptions. Clausewitz was convinced that effects in war cannot be traced back to a single cause as normally there are several concurrent causes at work. It is not sufficient enough to trace effects back to their causes, but also the causes themselves must be assessed correctly. He regarded the investigation of the nature of effects important.

¹ D. HUME: *A Treatise of Human Nature*, Oxford University Press, 1978, pp. 73–74.

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Otherwise we would face the danger of unending arguments leading to no conclusion. Clausewitz was also convinced that regarding effects and their causes it is impossible to establish laws and standards. Investigating the relationship between cause and effect becomes easy only if they are closely linked. However, in war everything is interconnected and the effects produced influence all subsequent events. Tracing effects back to their causes means that at every step effects can become causes themselves. An effect that appears correct at one level can become objectionable at a higher level, which always implies a new basis for judgement. This indicates a serious problem as the distance between cause and effect is proportionate to the number of other causes to be considered. In order to comprehend the intricate and difficult nature of causality in war, Clausewitz advocated a critical analysis to illuminate the connections and determine essential concatenations. Criticality is important as people are biased and tend to blindly follow a single line of thoughts. Clausewitz warned that as the analysis goes towards more sophisticated psychological effects, reliable evaluation becomes increasingly cumbersome. Regarding the will, which he defined as the interplay between courage and fear, even critical analysis cannot determine probable outcomes. Clausewitz was aware of the difference between effects and emphasised that “the psychological effect is what concerns us”.²

Effects-based operations

Despite the structural problems of causality as outlined by Clausewitz it appears that recent trends to employ Western armed forces are mostly ignorant of his warning. A good example for this can be seen in the term *effects-based operations*, which first appeared during the 1991 war against Iraq. In this war the American-led coalition forces achieved a victory that surprised even the most optimistic analysts. The world, expecting a rather bloody and protracted campaign against Saddam Hussein’s armed forces, witnessed a war fought at lightning speed with limited coalition casualties. The incredible potential of advanced technologies such as stealthy platforms and precision weaponry was in the global media. This new concept emphasised the primer of *achieving effects* on the enemy and disregarded large-scale destruction. Soon effects-based operations became a buzzword in the military lexicon and synonymous with Western, especially American, technological superiority. Over the years the concept proved so durable that it increasingly permeated military and political thinking. Terms such as *effects-based thinking*, *effects-based targeting*, *effects-based approach*, *effects-*

² C. VON CLAUSEWITZ: On War, *Everyman’s Library*, 1993, pp. 145–204 (quotation p. 199).

based planning, effects-based execution and effects-based assessment are almost commonplaces now.³ Armed forces outside NATO also started to move towards this direction as the Israel Defence Force Chief of Staff, General Moshe Ya'alon emphasised in an interview. According to him, force transformation issues must focus less on force and power, but more on effect.⁴ Apart from Clausewitz's concerns also the dictionary is ambiguous regarding the meaning of *effect*. The term has multiple meanings, but multiplicity does not obviously promote precision and clarity in military language.⁵ One observer ironically remarked that if the proponents of the concept "were aware of the many different meanings and usages of the term *effect* it is doubtful that they would have made it the first choice among the words they wanted to use."⁶ An effect normally follows an antecedent directly; therefore references to achieving indirect or higher order effects appear to be questionable at best and nonsensical at worst. The more we move towards so-called higher order effects, the more we must consider terms such as *consequence, outcome or event*. In other words, by approaching the intangible properties of war references to achieving effects become more and more meaningless. In the same way Clausewitz pointed out that regarding to our actions "consequences of some kind [would] always follow."⁷

Theoretical framework

In order to elaborate more on the obstacles and opportunities a causal focus offers and to comply with Clausewitz's demand for a critical analysis, we suggest a theoretical framework of our own. Although causality lends itself to further metaphysical and epistemological considerations, our intention is to deliver only an analysis in broad terms. The proposed framework is an attempt to explain the nature of war based on causality both in space and time. It helps us "investigate the essence of the phenomena of war and to indicate the links between these phenomena and the nature of their

³ ACT identified three objective areas with one focusing on achieving coherent effects. Goals include command for effective engagement, effects-based operations, and aspects such as effective engagement and joint manoeuvre effects. See Allied Command Transformation: *Integrated Project Teams*, 7 September 2004, pp. 1–2.

⁴ R. HUGHES: Interview, Lieutenant General Moshe Ya'alon, Israel Defence Force Chief of Staff, *Jane's Defence Weekly*, 17 November 2004, p. 34.

⁵ P. B. GOVE (ed. i. ch.): *Webster's Third New International Dictionary of the English Language*, Unabridged, Merriam-Webster Inc., 1981, p. 724.

⁶ Quotation in P. K. VAN RIPER: *Precision and Clarity in Military Language*, received via e-mail from author on 05. 09. 2006; P. K. VAN RIPER: *Planning for and Applying Military Force: An Examination of Terms*, *Strategic Studies Institute*, March 2006, pp. 5–6, 13–15.

⁷ Quotation in CLAUSEWITZ, p. 212.

component parts.”⁸ It also helps us develop a knowledge base to examine the nature of war in stages working from narrower to wider settings and vice versa.⁹ The merit of such an approach is that “if nothing else, [it] will help clarify military thinking” in a way that false assumptions can come to light.¹⁰ Similar to Hume properties of causality were for Clausewitz also the consequences of our imaginative capacities and the experience of the physical environment in which we act. Humans unconsciously connect factors that are ostensibly different.¹¹

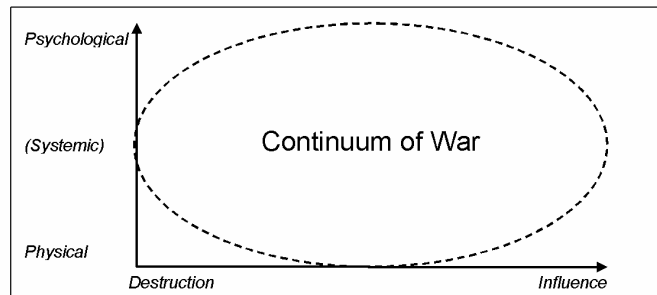


Figure 1. Depicting war as a continuum

Nevertheless Clausewitz regarded war as a serious activity in which both the enemy’s physical and psychic forces had to be destroyed. Whereas he saw the destruction of the former as the means of war, the latter was its objective. According to him efforts had to be aimed at the enemy’s power of resistance, which is “the total means at his disposal and the strength of his will”. War can end only if the enemy’s will is broken through a “gradual exhaustion of his physical and moral resistance.”¹² In order to comprehend war in terms of causality we first depict it as a continuum and display war as a result of various ends/means relationships as shown in Figure 1. This way we see war as a phenomenon, which works in an everything-affects-everything mode. We find complexity and interaction on various levels, which allow for all sorts of

⁸ Quotations in CLAUSEWITZ, p. 69.

⁹ R. C. RUBEL: The Epistemology of War Gaming, *Naval War College Review*, Spring 2006, Volume 59, Number 2, pp. 108, 120–122.

¹⁰ Quotation in A. M. LOPEZ, J. J. COMELLO, W. H. CLECKNER: Machines, the Military, and Strategic Thought, *Military Review*, September–October 2004, p. 77.

¹¹ E. JOHNSON: WAR in the Media: Metaphors, Ideology, and the Formation of Language Policy, *Bilingual Research Journal*, Volume 29, Number 3, Fall 2005, pp. 625–626.

¹² CLAUSEWITZ pp. 102–106 (quotations p. 106).

causality existing side-by-side. Whereas ends are depicted on the vertical axis characterised by the combination of physical and psychological effects, means are located on the horizontal axis ranging from destruction to influence. For simplicity reason the former stands for the actual use of force, the latter for coercing the enemy through the threat to use force. Common wisdom indicates that effects can be achieved either directly or indirectly. In a same way we also assume that effects can be recognised either immediately or after a certain and finite amount of time has elapsed. In the case of simple physical effects the time needed for recognition is either instantaneous or very short. Higher order effects need longer time to mature. Consequently, achieving and recognising psychological effects is far more difficult. Systemic effects link the two end-poles in various ways expressing that effects can flow freely from lower-order to higher-order status and vice versa. Physical effects are normally associated with the tactical level of war, but to a lesser degree they may also have relevance on the operational and strategic levels. Systemic effects can have both physical and psychological attributes.¹³ A given amount of physical destruction can cause systemic effects or such effects can be the result of operations collapsing certain functions that help maintain the enemy's war-making or war-sustainment capabilities. However, also psychological effects can result in systemic effects as it was the case in 1991 when Iraqi power plant directors feared bombardments and shut down their facilities as soon as an F-16 took off.¹⁴

Clausewitz regarded war as a complex phenomenon, which involves many factors and an abundance of interactions. Nevertheless out of this bewildering complexity we can discern two different, but interrelated domains such as the material and the non-material. The two domains display war as an “extreme trial of moral and physical strength and stamina” in which the actions of the belligerents aim at the “gradual exhaustion of the [enemy's] physical and moral resistance.”¹⁵ In the case we project the two domains of war onto the continuum as shown in Figure 2, we can see that physical effects are achieved in the material domain, psychological effects in the non-material

¹³ Most approaches that detail effects-based operations have a similar categorisation. Among others see: J. M. KREIGHBAUM (Maj.): Force Application Planning: A System-and-Effects-Based Approach, *School of Advanced Air Power Studies*, Air University, June 1998; D. J. GLEESON, G. LINDE (Col.), K. MCGRATH, A. J. MURPHY, W. MURRAY, T. O'LEARY, J. B. RESNICK: New Perspectives on Effects-Based Operations: Annotated Briefing, *Institute for Defense Analyses, Joint Advance Warfighting Program*, June 2001; E. MANN (Col., Ret.), G. ENDERSBY (Lt. Col., Ret.), T. SEARLE: Thinking Effects, Effects-Based Methodology for Joint Operations, *College for Aerospace Doctrine, Research and Education, Air University, Maxwell AFB, CADRE Papers No. 15*, October 2002.

¹⁴ A. D. DENNY: *U.S. Air Force Uses New Tools to Minimize Civilian Casualties*, Internet, accessed 20. 08. 2003, available at www.stratwise.com/countries_us_civ_casualties.htm.

¹⁵ *Ibid.*, pp. 80–86, (quotations p. 86).

domain. Clausewitz also indicated such an overlapping as he emphasised that war is “a trial of moral and physical forces through the medium of the latter” in which “psychological forces exert a decisive influence on the elements involved”.¹⁶ Thus the material and non-material domains of war interact and are inseparable. For Clausewitz the only difference between the two was that the moral element is the “most fluid element of all”.¹⁷ Based on the figure we can say that the material domain represents categories such as physical strengths and stamina. It describes the space the military tries to influence through combat and manoeuvre. Consequently, the material domain deals with tangible items the enemy usually needs to wage war. It includes assets such as physical platforms and communications networks. This domain is the traditional basis for measuring combat power, which has to be rendered inoperable. The material domain can also be described as some sort of *reality proper* or *ground truth*. Attempts to achieve effects in this domain must aim at physical ability and as a consequence serve the purpose of changing functions. The non-material domain on the other hand, is characterised by psychological factors such as moral strength and stamina. It represents the mind and attributes that generally influence the will in the form of perception, awareness, understanding, belief, and values. Effects in this domain stand for influencing intangibles the enemy needs to wage war. In fact, when compared to the material domain, the non-material domain appears at first as non-existent. However, by holding things together it permeates all human endeavours since it is the medium in which act and will merge. It points toward the ability and movement to act. Despite the difference regarding the two domains we assume a strong relationship between the two as physical and psychological properties form an organic whole.¹⁸ Clausewitz regarded the material domain the “wooden hilt,” the non-material domain was for him “the real weapon, the finely honed blade.”¹⁹ The figures display that despite our best effort to understand the way effects relate to causes and interrelate with each other, we have to acknowledge that mapping cause-and-effect relationships is even theoretically very complex. This hinders most attempts to precisely predict which cause results in what effect. Attempts that focus on detecting causality might easily result in *paralysis by analysis*, especially in terms of desired higher order effects in which causal

¹⁶ Quotations in CLAUSEWITZ, p. 145.

¹⁷ Quotation in *ibid.*, p. 111.

¹⁸ D. S. ALBERTS, J. J. GARTSKA, R. E. HAYES, D. A. SIGNORI: *Understanding Information Age Warfare*, CCRP Publication Series, August 2001, pp. 12–14; J. HUSS (Maj.): Exploiting the Psychological Effects of Air Power, A Guide for the Operational Commander, *Aerospace Power Journal*, Winter 1999, p. 23; I. MCNICOLL: Effects-Based Operations: Air Command and Control and the Nature of the Emerging Battlespace, *RUSI Journal*, June 2003, p. 39.

¹⁹ Quotations in CLAUSEWITZ, p. 217.

relationships are usually not directly identifiable. The relationship between decision-making and time also indicates that the shorter the time available the more likely it is that we think in terms of relevant analogies instead of looking for alternatives based on sophisticated analysis aimed at detecting causality.²⁰

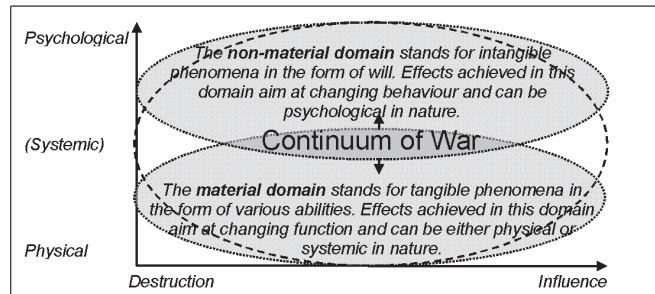


Figure 2. Continuum of war in terms of domains

Causality problems

The proposed theoretical framework made it clear that causal relationships in war are inherently complex and interrelated. Although in general both causes and effects can be identified in advance, it appears that in terms of causality we always face a given amount of uncertainty.²¹ As we move towards the non-material domain standing for higher order psychological effects, it becomes increasingly difficult to identify causal linkages. Although causes can be seen as limited proposition-like facts, the figures indicate effects to be the result of actual changes and processes that can go on indefinitely. The enormous array of interactions of the two domains generates endlessly complex alternatives that make it very difficult if not impossible, to isolate individual cases of causality. The higher the complexity of the situation the lower is our ability to detect useful causal relationships. At a certain threshold we find characteristics that can almost be seen as mutually exclusive.²² It appears that humans often do not understand

²⁰ E. A. SMITH: Complexity, Networking and Effects-Based Approaches to Operations, CCRP Publication Series, May 2006, p. 129.

²¹ D. EMMET: *The Effectiveness of Causes*, Macmillan, 1984, pp. 64–75.

²² J. STORR: A Critique of Effects-Based Thinking, *RUSI Journal*, December 2005, pp. 34–35; G. A. DUCZYNSKI: To what extent can knowledge management systems build and reinforce consensus around initiatives for change? A self-reflective analysis of professional practice, Ph. D. thesis, Edith Cowan University, November 2001, pp. 131–136.

the subtle difference between exactness and correctness. Whereas the former stands for causes, the latter represents effects. As the figure displays causes can mostly be identified through direct experimentation, but effects can only be postulated from theories not amenable to direct proof. In other words, desired effects are nothing more than extrapolations of a known past onto an unknown future. We prefer to see the relationship between past and future in causal terms and “think that the past has ‘more reality’ than the future.”²³ Human behaviour allows both for stochastic and functional associations, which means that the outcomes even of repeated actions are never constant, but cover a range of possibilities. Although on occasion we might have sufficient knowledge of the possible consequences, or even adequate knowledge for estimating certain statistical probabilities of some possible consequences, it will never be possible to predict with certainty the consequences in any particular case. Hence we will never be able to define completely homogenous categories or categories with sufficient homogeneity that allow for accurate predictions based on causality. The theoretical framework indicates that we always have to expect a deviation between effects desired and effects achieved. Past experience might allow for discerning general rules, but helps little in anticipating the direction and extent of deviations. A causal mechanism that was successful under a given condition will not obviously be successful under all or other conditions. Regardless the information we possess we can attend to only some aspects of a situation, but never to all aspects. Complex interactions mean that even the actions of one belligerent have ramifications. Effects are never restricted to the area they were originally aimed at, but might occur in areas that are interrelated though ignored at the time the action was taken. Predicting the effects of complex interactions is also problematic since the prediction itself can become an important new element that influences the initial course of actions. However, the introduction of any new element points toward inconsistency, which often account for unforeseen, unexpected and unanticipated consequences.²⁴

Conclusion

The term effects-based operations suffers from semantic problems, which in the end mystify rather than clarify ideas. It expresses the human tendency to explain a complex

²³ T. J. SAKULICH (Lt. Col.): Precision Engagement on the Strategic Level of War: Guiding Promise of Wishful Thinking, *Occasional Paper Number 25, Air University*, December 2005, pp. 15–26; P. HORVICH: *Asymmetries of Time, Problems in the Philosophy of Science*, MIT Press Classic Series, 1987, pp. 129–145 (quotation p. 143).

²⁴ R. K. MERTON: The Unanticipated Consequences of Purposive Social Action, *American Sociological Review*, December 1936, pp. 898–904; Gove pp. 1729–1730.

human phenomenon such as war in the framework of a causal nexus. Hence the Jominian scientific image of war composed of a network of causal processes and interactions. It appears that with effects-based operations we tend to confuse the nature of change with the causation of change. Generalisations relating causes to effects can only be true in one or at best in some of the underlying properties. As soon as the properties blur in space and time, which is always the case in war no disposition can deliver useful generalisations. Consequently, we have to rethink in terms of co-variation or correlation rather than imposing causality.²⁵ Both co-variation and correlation stand for phenomena that follow one another in a regular fashion, but do not imply causal relationships *per se*. Nevertheless, addressing war in causal terms means that we tend to interpret cases of co-variation and correlation as manifestations of causality. Despite Clausewitz's warning we are too ready to assume causality, and often confuse causation with co-variation and correlation.²⁶ The structural and semantic problems point towards at least four limitations we have to consider when addressing war in terms of causality: the need to understand the enemy as fully as possible; the need to understand causal relationships between actions and higher order effects; the ability to assess the consequences of our actions; and to synchronise our actions with the different requirements demanded by the various levels of war. War's proverbial friction as introduced by Clausewitz, works against detecting clear causal relationships. It indicates variation in terms of causal relationships, which does not allow discerning anything in absolute terms.²⁷ Despite the confidence regarding the ability to link causes and effects directly and comprehensively, we must bear in mind that even with effects-based operations "absolute objectivity, clinicalism, and precision in mapping causation are unattainable ideas" both in general as outlined by Hume and in particular as outlined by Clausewitz.²⁸

²⁵ A. SH. ABDULLAEV: *The Ultimate of Reality: Reversible Causality*, Internet, accessed 16. 11. 2006 available at www.bu.edu/wcp/Papers/Meta/MetaAbdo.htm; B. C. MCCULLAGH: *Natural Necessity, Objective Chances and Causal Powers*, Internet, accessed 16. 11. 2006 available at www.bu.edu/wcp/Papers/Meta/MetaMcCu.htm.

²⁶ P. W. CHENG: From Covariation to Causation: A Causal Power Theory, *Psychological Review*, 1997, Volume 104, Number 2, pp. 367–369, 398.

²⁷ M. MCCRABB, Dr.: Limitations to and Effects-Based Approach to Planning, Executing or Assessing Military Operations, received via e-mail from author on 12. 11. 2006, pp. 1–5.

²⁸ Quotation in R. BEAUMONT: *War, Chaos, and History*, Praeger Publishers, 1994, p. 27; Hume, pp. 82–84.