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Network Centric Warfare: Developing and Leveraging Information Superiority

Michael C. Fowler

David S. Alberts

John J. Garstka

Frederick P. Stein

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military power in the pursuit of limited political goals, by opening up new avenues of understanding into the formation and execution of military policy. Written in a highly readable style that eschews both political science jargon and "military-speak," this work is a valuable addition to the bookshelf of anyone interested in seeing how strategy has been determined in the actual rather than the abstract/theoretical world. It is essential reading for those who would understand the *why* of military strategy as well as the what.

THOMAS R. BENDEL
Lieutenant Commander, U.S. Navy

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Alberts, David S., John J. Garstka, and Frederick P. Stein. *Network Centric Warfare: Developing and Leveraging Information Superiority*. Washington, D.C.: C4ISR Cooperative Research Program, 1999. 256pp. (no price given)

This work is the latest attempt to illustrate the concept of network-centric warfare (NCW). According to the book's preface, its purpose is to "help prepare for the journey that will take us from an emerging concept to the fielding of real operational capability." Within that framework, two subsequent goals are defined: to articulate the nature of the characteristics of NCW, and to suggest a process for developing operational capabilities. Yet with these defined goals, it is less than clear what role this book is supposed to fill. It seems, ostensibly, to be a guidebook or textbook for further exploration into and definition of the NCW concept, but it may also have been meant as a reference book on the current state of thought and writing on this subject.

The essential message is that information technology allows for a better flow of information, which in turn enhances organizational and combat effectiveness. The book begins with a treatment of how information technology has enhanced business practices. Although imperfect in some areas, this is the best part of the work. However, in the sections that follow, which discuss military implications of information technology and network-centric warfare itself, the book begins to exhibit difficulties. This is both unfortunate and unexpected, given the collective experience of the authors. David S. Alberts is a Ph.D. with twenty-five years of defense experience; Frederick P. Stein is a retired Army colonel, with service in the Signal Corps; and John J. Garstka is a former Air Force officer and coauthor of the NCW concept with Vice Admiral Arthur Cebrowski, President of the Naval War College.

As it is, there are production flaws that stand in the way of

deriving useful information from the text, and conceptual flaws, aspects of NCW that might have been developed further.

The book suffers from a layout that does not facilitate a sound understanding of the information. A good table of contents gives a listing of the main topics and subtopics to be covered; not so with this book, and the result is an inadequate portrayal of its contents. What is listed are figures, which in many cases are intricate and come with insufficient explanations. There is no index, forcing the reader to spend more time than should be necessary searching for information.

It also becomes apparent that this is not a book for laymen or anyone not initiated to network-centric warfare. Obscure terms and references are either poorly explained or not explained at all. An explanation of NCW should have been given in the introduction, but the first appears one-third of the way through the book. In addition, there is no explanation of the basic operating principles behind networks in general. This information would have been a good basis upon which to start this book.

The conceptual flaws can be accounted for somewhat by the novelty of NCW. As such, there will be criticism here only about the lack of development of various questions surrounding NCW, rather than the fact that the book does not offer solutions to those questions. First of all, this book is centered around the Navy, and ideas are couched in naval terms. This is not a grave flaw, since the Navy invented NCW. However, it would have been interesting to have more input from the other services and civilian agencies, particularly in light of the need for joint operations. Little consideration is given to land operations using NCW, even though this is a question that will have to be addressed, probably sooner rather than later.

No political or strategic context is explored. It would have been interesting to read the thoughts of the authors on what NCW might mean to strategy and politics. Instead, the book is centered around operations. In addition, there is no exploration of how NCW might change or facilitate decision making for the National Command Authorities, or in general. Better examples of how an NCW force would fight, in addition to how it processes information, would also have been interesting. Also, more comparisons between current force structures and potential NCW forces would have been edifying.

A further conspicuous absence is any discussion of the limitations NCW may encounter, particularly regarding its use in joint operations or with allied forces. Indeed, there is very little exploration of

joint or allied operations, an interesting omission considering how important both are to fulfilling American political and strategic goals.

In addition, a number of assumptions are alluded to (perhaps unintentionally), without explanation, that tend to weaken the NCW concept as it is described in this book. For instance, strategic context and action are assumed away in favor of a focus on gathering, processing, and disseminating information. Another assumption is that there will be less need to move forces into position to take action, which implies that the necessary forces for a given operation will always be in position. This seems unrealistic. Finally, the authors mention the idea that levels of war that have been used in defense concepts for years will collapse or be compressed under NCW. They do not say what this means, or if it will be true for all services.

This book falls short of its goal. It is not a good text or reference book. Such a book would facilitate access to knowledge, clearly explain key points, and provide references for future explorations. It is not hard to understand why NCW has had difficulty finding wider acceptance. This is the kind of work one expects to find in a magazine article, not in a book of more than 250 pages. The ultimate value of this book will depend on the needs of the reader. If one is already grounded in NCW concepts, it will provide a useful review of the current state of the literature. However, all others must look to future publications.

MICHAEL C. FOWLER
Newport, Rhode Island

Leonhard, Robert R. *The Principles of War for the Information Age.* Novato, Calif.: Presidio Press, 1998. 287pp. $29.95

Robert R. Leonhard is an active-duty Army officer who is clearly well versed in Army doctrine. His previous works include *Fighting by Minutes* and *Art of Maneuver.* His third book, *The Principles of War for the Information Age,* is a thought-piece that is occasionally entertaining and thought provoking but sometimes tedious. Leonhard explains that "the purpose of this book is to examine each of the principles of war and to comment on their validity and utility." He accomplishes his objective, though the reader may find it slow going in some places. Although Leonhard's lively writing style relieves some of the tedium, at the same time it can be distracting.

Leonhard uses historical vignettes to illustrate the nine principles of war. They are well written and generally quite interesting. Although no glaring errors present