

# NETWORK CENTRIC OPERATIONS: DON'T FORGET THE HUMAN FACTOR

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## Introduction

Network Centric Operations (NCO) hinges on the combined action of a force, rather than its constituent platforms through real time information collation and analysis to considerably reduce the 'fog of war' and maximise effect.<sup>1</sup> Its basic tenets are essentially: a networked force improves information sharing; to raise situational awareness; for self-synchronisation; collaboration and speed of command, to in turn, flatten the command structure and increase effectiveness.<sup>2</sup> This gives rise to the Newtonian notion of warfare as a well designed and functioning engine that will ensure final victory. There is excessive focus on the belief that warfare is amenable to control and that technological advances can force the enemy to act in a desired direction.<sup>3</sup>

This paper, while analysing the basic tenets of NCO, will establish that notwithstanding significant technological improvement in information flow, uncertainty in war prevails. The paper will conclude that technological advancement stemming from NCO notwithstanding, the cognitive application of human ability and the traditional levels of command continue to have relevance.

NCO enthusiasts have propagated a notion that war is business<sup>4</sup> in direct contrast to Clausewitz's dictum that war is an act of violence to further the cause of

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<sup>1</sup>*INBR 8, Indian Maritime Doctrine (2009), MDCC, IHQ MoD (Navy), New Delhi, p 76.*

<sup>2</sup>*Understanding NCO (2010), MDCC, IHQ MoD (Navy), New Delhi, pp 12-13.*

<sup>3</sup>*Barnett, Thomas (Jan 1999), 'The Seven Deadly Sins of Network Centric Warfare', USNI Proceedings, p 38.*

<sup>4</sup>*Late 1990s, Pentagon was directed to take advantage of the "revolution in business affairs" to improve efficiency, apparently influenced by Alvin and Heidi Toffler's 1993 book War and Anti-War: Survival at the Dawn of the 21st Century. The central theme of the Tofflers' work was that "the way we make war reflects the way we make wealth; and the way we make anti-war must reflect the way we make war." A revolutionary "new economy" was arising based on knowledge rather than on conventional raw materials and physical labor; and bringing with it a parallel revolution in the nature of warfare. Themes in the book were later accepted by proponents of network-centric warfare (NCW) eg Alberts, D.S, Garstka, J.J, Stein, F.P (2002), Network Centric Warfare, (Washington DC, CCRP), p 69. A counter view to this argument is advocated at Vego, Milan (2010), Is the Conduct of War a Business?, Joint Forces Quarterly, Issue 59, (Washington: NDU Press,) and Hammes, T.X (1998), "War Isn't a Rational Business," USNI Proceedings, They have made a distinction between efficiency and effectiveness, leadership and management, initiative and self synchronisation and most importantly stressed upon the element of risk taking, danger as a source of friction and the human factor in conduct of warfare.*

politics.<sup>5</sup> While, classical discourse on war constantly reminds that war is driven by human nature, NCO proponents think that information technology and weapon systems based on it can, all by themselves, fundamentally change that fact.<sup>6</sup> This obsession with technology is well on its way towards a Newtonian description of warfare. "First the target must be detected. Second it must be identified. Third the decision to engage must be made. Fourth, the decision must be conveyed to the weapon. Fifth, the weapon must be aimed and fired."<sup>7</sup> The nature of network and weapons is more in focus than the character of man.<sup>8</sup>

Many analysts consider NCO as a Revolution in Military Affairs (RMA), requiring the combination of new technology with new operational concepts and organisational adaptations, like self synchronisation and flattening of command.<sup>9</sup> NCO proponents contend that by harnessing technology we should try to achieve accurate information with zero time delay, a concept that changes the very basics of war fighting.<sup>10</sup>

However, Clausewitz has succinctly brought out the nature of information and the role of the Commander in its correct application and utility, as follows:-

*“Great part of information obtained in war is contradictory, a still greater part is false, and by far the greatest part is of doubtful character. The timidity of men acts as a multiplier of untruths. Everyone is inclined to magnify the bad in some measure, raising alarms in a sinusoidal manner.*

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<sup>5</sup> Clausewitz lays emphasis on the emotional quotient.

<sup>6</sup> Kaufman, A., (2005), *Curbing Innovation – How Command Technology Limits Network Centric Warfare*, (Argos Press Australia), p 60 and Mattis, James N (2008), *USJFCOM Commander’s Guidance for Effects-based Operations, Parameters*, p 24. The authors dismiss Net-centric emphasis as it tends to ignore the spiritual (human element). The nature of war is immutable: You need trust and connection. These issues have also been highlighted in Lawson, S (2012), 'Is Network-Centric Warfare (Finally) Dead? Only Partly', available at <http://www.seanlawson.net/?p=772>, accessed on 24 Nov 13.

<sup>7</sup> This aspect has been highlighted by Vego, Milan (2004), *Operational Command and Control in the Operational Age, Joint Forces Quarterly*, pp 100-107. Focus on targeting makes it harder to determine whether and when an objective has been achieved and can lead to attrition warfare on the operational and strategic levels. Moreover targeting directs almost all attention of the operational commanders and their staff to the tactics of weapons and platforms instead of the operational and strategic situation.

<sup>8</sup> Theory must take into account the human element (courage, boldness, even rashness). *The Art of War* has to deal with living and with moral forces, the consequences of which is that it can never attain to the absolute. Amplified in Wallace, William S. (2005), "Network-Enabled Battle Command." *Military Review* Vol LXXXV, No. 3, p 5.

<sup>9</sup> Boot, Max (2006), *War Made Easy - Weapons, Warriors and the Making of the Modern World*, (New York: Gotham Books), pp 9-11.

<sup>10</sup> Cebrowski, A, Garstka, J.J (1998), "Network Centric Warfare: Its Origins and Future", *USNI Proceedings*, p 31.

*Firm in reliance on his own better convictions, the Commander must stand like a rock against which the sea breaks its fury in vain.*"<sup>11</sup>

Validity of this thought has not been negated in a networked environment. The idea of NCO proponents is true if, and only if, the enemy passively lays himself out to be observed. The enemy has a will of his own and usually does not conform to expectations.<sup>12</sup> Uncertainty is not just the result of gaps in information but is also caused by lack of comprehension or false interpretation of information. This interactive nature of war is a source of uncertainty and unpredictability, the Achilles' heel of NCO theory. The essence, that information and its relevance is about a human being's natural reaction to it and not just about information, is lost in the process believing that war can be conducted as a well designed machine.<sup>13</sup> It is claimed that netting forces will lead to information superiority. Achieving information superiority depends on space, time, force, and the objectives to be accomplished. More information does not translate directly into information superiority. It does not guarantee sound decisions though it is one of the many critical factors for success.<sup>14</sup> Emphasis on information superiority will make Commanders averse to risks and wait instead of act, in contrast to the ability to act quickly with willingness for prudent risks.

Proponents of NCO assert that no plan survives initial contact with the enemy because situational awareness increases and decreases in a cyclical pattern and this can be mitigated by netting of forces.<sup>15</sup> The true reason that plans do not survive initial contact with the enemy is the intangibles, the presence of friction and fog of war due to uncertainties at the operational and strategic levels. Technological superiority may allow analysts to know almost everything about

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<sup>11</sup>Carl von Clausewitz (1952), *Vom Kriege*, quoted in Vego, Milan (2009), *Joint Operational Warfare*, (Newport Rhode Island: US Naval War College), p XIII-4 and amplified in Carl Von Clausewitz (1976), *On War*, edited and translated by Michael Howard and Peter Paret, (New Jersey, Princeton University Press.), pp 95, 136-137.

<sup>12</sup>Colin S. Gray (1999), *Modern Strategy*, (Oxford: Oxford University Press), p 42.

<sup>13</sup>Vego, Milan, (2003), "Net-Centric is not Decisive", *Proceedings of the Naval Institute* 129:1, Jan 2003, pp 52-57.

<sup>14</sup>Carl von Clausewitz (1976), *On War*, Op cit. pp 95, 136-137..

*What matters is not how much intelligence there is, but how much is accurately assessed. We now know more, but this makes us more, not less uncertain. This activity is still plagued by the problems of perception, subjectivity, pre-conceived notions and wishful thinking.*

<sup>15</sup>Cebrowski, A. and Garstka, J. (January 1998), 'Network Centric Warfare: Its Origin and Future', *USNI Proceedings*, p.33.

the battlefield, but may not always understand everything they think they know.<sup>16</sup> The way to gain military advantage is not just technological advances, but to figure out how to better utilise it.<sup>17</sup> Information is of little value if war is conducted with an unsound and incoherent strategy and poor application of concepts. In a game of chess, both players have complete information between evenly matched forces and are in perfect control. But the winner is determined by the timing of the attack, dependent not only on information but also on ability and experience. The player who views the board as an intermeshed plane, with each move as a prelude to a series of further moves, is more likely to be successful than an opponent who thinks of a single move at a time. This dispels the primacy of information superiority and supports the idea that intellectual capability is the deciding factor.<sup>18</sup> While discussing information superiority, the ignorance of knowledge that cannot be measured is at the peril of success.<sup>19</sup>

NCO theorists tend to describe that operational level of warfare is well past contemporary relevance.<sup>20</sup> They argue that hierarchical command and control relationships are not relevant for warfare in the information age. Emphasis is on pushing decision-making information out to the “edges” of the organisation by changing the way individuals, organisations, and systems relate to one another. It involves the empowerment of individuals at the edge of an organisation.<sup>21</sup> NCO theorists posit, “good generalship largely means giving up power today,” and training the next generation to recognise that “power and decision-making are

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<sup>16</sup>Leong, LTA Lawrence, 'Uncertainty, Friction, Politics and the Moral Dimension: Four Reasons Why NCW Theorists Should Re-read Clausewitz', [http://www.mindef.gov.sg/content/mindef/publications/pointer/journals/2007/v33n2/Uncertainty\\_Friction\\_Politics\\_and\\_the\\_Moral\\_Dimension\\_Four\\_Reasons\\_Why\\_NCW\\_Theorists\\_Should\\_Re-read\\_Clausewitz.print.html?Status=1](http://www.mindef.gov.sg/content/mindef/publications/pointer/journals/2007/v33n2/Uncertainty_Friction_Politics_and_the_Moral_Dimension_Four_Reasons_Why_NCW_Theorists_Should_Re-read_Clausewitz.print.html?Status=1), accessed on 25 nov 13

<sup>17</sup>Boot, Max (2006), *Op. Cit.* p 459.

<sup>18</sup>Friedman, N (2009), *Network Centric Warfare*, (Annapolis: Naval Institute Press), p 46. Halsey's actions during the Leyte Gulf operations are an example of a Commander possessing information superiority but still making bad decisions.

<sup>19</sup>Vego, Milan (2009), 'Systems versus Classical Approach to Warfare', *Joint Forces Quarterly*, Issue 52. Vego asserts that Operational thinking is not identical to what information warfare advocates call situational awareness—a term used in training pilots; strictly defined, situational awareness refers to the degree of accuracy with which one's perception of the current environment mirrors reality. Situational awareness does not necessarily mean an understanding; it is purely a tactical, not operational or strategic, term.

<sup>20</sup>Arquilla, J and Ronfeldt, D. (1997), *In Athena's Camp Preparing for Conflict in the Information Age*, (Rand Corporation ebook), p 106. The authors elaborate that by "Implementing coherent operations", capabilities for command of simultaneous operations will be increased and that the current spatial and temporal distinctions among the strategic, operational and tactical levels can be removed."

<sup>21</sup>Alberts, D.S., Hayes, R.E., (2003), *Power to the Edge: Command, Control, in the Information Age*, (Washington DC: Command and Control Research Program), p 5.

going to bubble up from below or the edge.”<sup>22</sup> This is due to NCO’s propagation of knowledge and situational awareness of the entire theatre, to all actors, to simultaneously achieve decisive effects, at the tactical, operational and strategic levels.<sup>23</sup> Building on the contention that technology is compressing time and merging the space in which military actions occur, NCO theory urges a "Hands Off" style leadership wherein Commanders develop the plan, state their intent, push decisions to the edge and stand back to let the tactical forces act.

The ability of NCO to develop a common operating picture tempts Operational Commanders to be increasingly involved in tactical decisions instead of focusing on the operational and strategic aspects. NCO affords the strategic level the ability to watch and influence every decision and action at the tactical level. Concurrently, tactical commanders could easily be distracted by the operational or strategic aspects of the situation. This potentially is the biggest problem in the practical application of NCO. Each Commander should be provided only as complete as possible a picture of the situation within his area of responsibility and the key elements of the situation in his area of interest as is relevant to him. What the information warfare enthusiasts call "shared awareness" looks more like an excuse for the Operational Commander in a theatre to interfere in the tactical decisions and actions of subordinate commanders or de facto flattening of command structures.<sup>24</sup>

Theorists have observed that NCO has the potential to enhance the speed of command, leading to "decision superiority," thus transcending barriers created by levels of command, to permit parallel and continuous operations.<sup>25</sup> The contention is that intermediate levels of command can be eliminated because they do not add to the speed of a decision.<sup>26</sup> While supporting their argument, NCO enthusiasts tend to pay more attention to historical experiences and lessons in which the role of technology is exaggerated to suit preconceived notions by singling out the effect a technological development has had in a certain war. At the same time, the role of factors such as leadership, training, and doctrine are

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<sup>22</sup>*Ibid*, p 10 and *Understanding NCO (2010)*, p 41.

<sup>23</sup>Smith, Edward A., Jr. (Spring 2003), 'Network Centric Warfare: Where's the Beef?', *Naval War College Review*.

<sup>24</sup>Singer, Peter W. (2009), 'Tactical Generals: Leaders, Technology, and the Perils', <http://www.brookings.edu/research/articles/2009/07/summer-military-singer>, accessed on 12 Jan 2014.

<sup>25</sup>Alberts, D.S., Garstka, J.J., (2004), *Network Centric Operations: Conceptual Framework Version 2.0*, (Vienna, VA: Evidence Based Research), pp. 82-84. *The idea relates to the flattening of levels of command.*

<sup>26</sup>Arquilla and Ronfeldt (1997), *Op cit*. p 339 and Alberts, D.S., Hayes, R.E., (2003), *op.cit*. pp 201-222.

downplayed or omitted.<sup>27</sup> It is accepted among military historians that superior generalship and training - not the telegraph or railroads - were the principal reasons for the German victories over France in 1870-1871, a fact ignored by proponents of NCO who argue instead that the Germans won because they had better civilian railroads.<sup>28</sup> Likewise, the early German victories in 1940 are attributed to innovative exploitation of weapons common to both sides - tank, aircraft, and radio.<sup>29</sup> The Germans won because of a more accurate vision of the war, better integration of arms, superior leadership, morale, and training; supported by a superior general staff who practiced operational art and exercised effective operational command.<sup>30</sup> Therefore, flattening command structures because technology allows a larger span of control cannot be explained in terms of sound organisation. Moreover, centralisation of operational planning and execution imposes restrictions on initiative and reduces combat effectiveness. Also operational level of command is necessary for uninterrupted planning in peace, crisis, and war.

Theory states that shared awareness of the battle space coupled with understanding of the Commander's intent will enable forces to self synchronise and be more effective when operating autonomously.<sup>31</sup> Self synchronisation has become the most often-quoted advantage of NCO, apparently referring to the tactical level, where it is relatively easy to achieve.<sup>32</sup> Three essentials are defined as prerequisites for successful self synchronisation - commander's intent, situational awareness and trust.<sup>33</sup> It requires actions to be tightly coordinated for

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<sup>27</sup> Vego, Milan (Jan 2003), "Net-Centric is not Decisive", *USNI Proceedings*, pp 52-57

<sup>28</sup> Boot, Max (2006), *War Made Easy - Weapons, Warriors and the Making of the Modern World*, (New York: GothamBooks) pp 116-145.

<sup>29</sup> Boot, Max (2006), pp 212-240.

<sup>30</sup> *The debate is between operational manoeuvring of mechanised forces, a concept developed by Fuller and adopted by the German Staff vis-à-vis their deployment in support of infantry in static defensive lines by the French Army.*

<sup>31</sup> Alberts, D.S., Garstka, J.J., Stein, F.P., (2002), *Network Centric Warfare*, (Washington DC: CCRP), p.91; Hughes Jr, W. P. (2000), *Fleet Tactics and Coastal Combat*, (Annapolis, Naval Institute Press), p 285.

<sup>32</sup> Cebrowski, Arthur K. and Garstka, John J. (1998), "Network-Centric Warfare: Its Origins and Future," *USNI Proceedings*, p 35 and Hatter, Steven D. (2000), *Self Synchronisation: Splendid Promise or Dangerous Delusion?*, <http://www.dtic.mil/get-tr-doc/pdf?AD=ADA381665>, accessed on 31 Oct 2013. *Self synchronisation is the ability of a well-informed force to organise and synchronise warfare activities from the bottom-up. It overcomes the loss of combat power inherent in top-down command directed synchronisation characteristics of more conventional doctrine and converts combat from a step function to a high-speed continuum.*

<sup>33</sup> Bezooijen, B. J. A. van, Essens P. J. M. D. and Vogelaar A. L. W., 'Military Self Synchronisation: An Exploration of the Concept', [http://www.dodccrp.org/events/11th\\_ICCRTS/html/papers/065.pdf](http://www.dodccrp.org/events/11th_ICCRTS/html/papers/065.pdf), accessed on 01 Nov 2013.

right actions against the right vulnerabilities at the right times.<sup>34</sup> Self synchronisation allows each unit to best respond to unfolding events without being told to do so by someone higher in the chain of command, but they must fully understand the Commander's intent, and their part in it, if they are to correctly mould their actions to produce the desired result.<sup>35</sup>

Therefore, the first need is for the Commander to effectively transmit his intent for the subordinates to work within it. Further, the subordinate commanders will need to understand the operational plan and the role of other units, to react appropriately, not only to the changing environment and enemy, but also in concert with the actions of other friendly units.<sup>36</sup> The next requirement is to develop shared situational awareness.<sup>37</sup> Availability of information can be translated into decision advantage if copious amounts of information can be sifted, filtered and integrated.<sup>38</sup> Most of that work depends on the human element,<sup>39</sup> using their experience and knowledge of the situation, as well as established doctrine or procedure. While technology allows development of a Common Operating Picture, each unit will likely interpret the information in a slightly different way, as each will perceive, absorb and interpret what they see in a different manner.<sup>40</sup> This primarily stems from the fact that the cognitive process is tempered by individual beliefs, assumptions, interpretations from resident memory.<sup>41</sup>

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<sup>34</sup>Smith, Edward A., Jr. (Spring 2003), 'Network Centric Warfare: Where's the Beef?', *Naval War College Review*.

<sup>35</sup>Lloyd, Merfyn (2002), *Command Considerations for UK Network Enabled Forces: A Speculative View* (London: UK Defence Science and Technology Laboratory Publication), p 9.

<sup>36</sup>Net-Centric Environment: Joint Functional Concept, Version 0.95 (December 30, 2004), US Department of Defense (Washington DC: US Department of Defense Publication), p 15.

<sup>37</sup>The Implementation of Network-Centric Warfare (2005), Office of Force Transformation (Washington DC: US Department of Defense Publication), p 8.

<sup>38</sup>Coakley, Tom (May 2001), 'Decision Superiority: A Junior Officer's Practical Guide to Knowledge-Based Operations', *Air & Space Power Chronicles*, <http://www.airpower.maxwell.af.mil/airchronicles/cc/coakley.html>, accessed on 25 Oct 2013.

<sup>39</sup>McColl, John (Feb 2004), 'Adapting Command Hierarchies: Does NEC Pose a Threat or an Opportunity?', *RUSI Journal*, Vol 149, Issue 1, p 54.

<sup>40</sup>Kolenda, Christopher, D. (Spring 2003), 'Transforming How We Fight', *Naval War College Review*, Vol 56, No 2, p 100.

<sup>41</sup>Adams, Thomas K. (Autumn 2000), 'The Real Military Revolution', *Parameters*, Vol 30, pp. 54-65, <http://strategicstudiesinstitute.army.mil/pubs/parameters/articles/00autumn/adams.htm>, accessed on 03 Nov 2013. Eg technology may move information down to the lowest level so that it is possible for the men inside tanks to have as much information as their commanders have. . . . But once you give that information to tank crews, and they start working for their own safety, their own victory, how are they going to respond to commands from above? And what happens to battle strategy? Is it in the head of the commander, or do you just train the crews and let them figure it out for themselves as the situation demands?

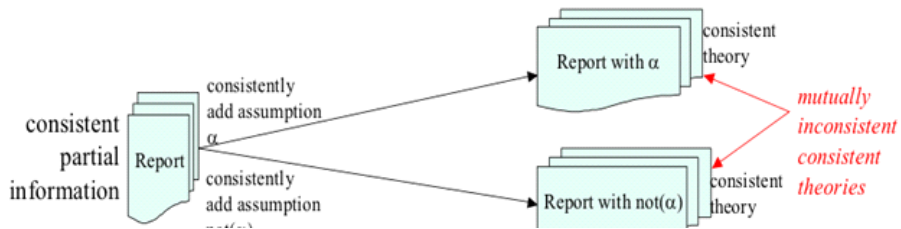


Figure 1: Information Interpretation {Source - Lambert, Dale and Scholz, Jason (2005), *A Dialectic for Network Centric Warfare*, [http://www.dsto.defence.gov.au/attachments/A\\_Dialectic\\_for\\_NCW-final\\_public\\_release.pdf](http://www.dsto.defence.gov.au/attachments/A_Dialectic_for_NCW-final_public_release.pdf), accessed on 31 Oct 13}

This means that each viewer of the Common Operating Picture could develop a different situational awareness. Compounding this problem is the fact that most viewers will be under stress and thus exacerbate the differences in awareness.<sup>42</sup> Differences in shared situational awareness imply that actions contrary to the Commander's intent are still possible and thus negate the benefits of self synchronisation.<sup>43</sup> Awareness effectiveness demands the simultaneous development of both technological and knowledge capability areas for information flow, sharing and analysis.<sup>44</sup> Technology alone cannot cope with all of the information that will be generated by NCO; therefore, focus must be on the human interface with the system to turn that information into exploitable knowledge.

At the operational and strategic levels, synchronisation extends to operational functions such as intelligence, command and control warfare, operational fires, logistics, and force protection. Synchronisation of these functions are much more complicated and require detailed planning and coordination necessitating a much needed detachment from the tactical battle. Moreover, synchronisation is related to sequencing and without the correct sequencing of objectives and/or tasks, it has no relevance. Therefore, command designs that favour a decentralised self synchronising structure may lose the

<sup>42</sup>Kolenda, Christopher, D. (Spring 2003), *op. Cit.* p 110 and Zimm, Alan D. (May 1999), 'Human Centric Warfare', *Proceedings*, pp. 28-31, <http://www.usni.org/magazines/proceedings/1999-05/human-centric-warfare>, accessed on 31 Oct 2013.

<sup>43</sup>Milan, Vego (2009), *Joint Operational Warfare*, p XIII-10, amplifies that situational awareness is neither sufficient nor necessary condition for self synchronisation. Two actors in perfectly harmonious understanding of situation may act at cross purposes due to different personal interests and intentions. Similarly two actors in disagreement on same situation may still work together due to open mindedness or shared intent.

<sup>44</sup>Net-Centric Environment: Joint Functional Concept, Version 0.95 (December 30, 2004), US Department of Defence (Washington DC: US Department of Defence Publication), p 12.



“value added” perspective provided by levels of command. Not only must the right information be available to the right person at the right time in the right form, but also it must be put to the right use.<sup>45</sup> A doctrine based on flattened command structure deprives itself of the unique vision and wisdom of different levels of command, and thereby risks missing opportunities and dangers for unfolding campaign plans.<sup>46</sup> Vego’s assertion that the intermediate level is valuable because it helps Commanders focus explicitly on objectives and integration rather than tactics remains persuasive.<sup>47</sup>

A key element of effective command and control is the speed of command and soundness of decisions and NCO aims to aid this process. Decomposition of Boyd's OODA loop<sup>48</sup> into subsets allows classification of decisions by the cognitive resources required. The classification being 'recognition primed decisions', requiring few, if any, cognitive resources beyond retrieval from memory, and 'analytical decisions', which are dependent on analysis.<sup>49</sup>

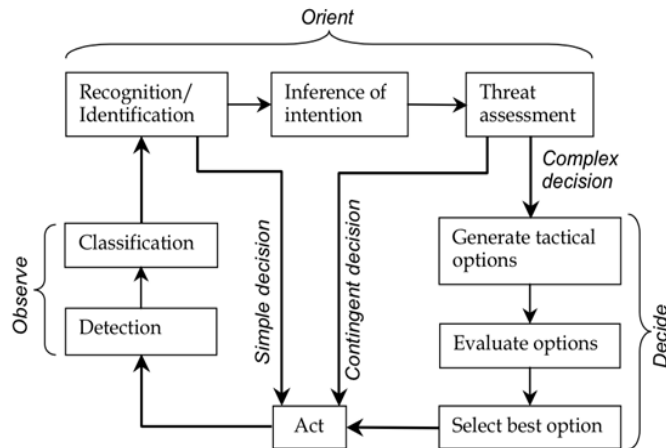


Figure 2: The OODA Loop Decomposed (Source - Fewell MP & Hazen Mark G (2005), *Cognitive Issues in Modelling Network-Centric Command and Control*, DSTO, Canberra, p8)

<sup>45</sup>Fewell MP & Hazen Mark G (2005), *Network Centric Warfare: It's Nature and Modelling*, (Canberra:DSTO), p 34.

<sup>46</sup>Nugent, Robert P. (2003), *Operational Artists or Micromanagers: Some Propositions on the Future of Generalship in Net-Centric Warfare*, <http://www.dtic.mil/dtic/tr/fulltext/u2/a420354.pdf> accessed on 29 Oct 13, p 18. This issue has also been analysed in Lauren, Michael K. (2011), 'Some Non-Technical Limitations on NEC/NCO Concepts', *The International C2 Journal*, Volume 4, Number 2, (Washington DC: CCRP), p 15.

<sup>47</sup>Vego, Milan (2009), *Joint Operational Warfare*, (Newport RI: US Naval War College), p VII 20-21

<sup>48</sup>Boyd, J., (1976), "New Conception for Air to Air Combat", Hand written notes, Accessed online at [http://www.d-n-i.net/boyd/pdf/fast\\_transients.pdf](http://www.d-n-i.net/boyd/pdf/fast_transients.pdf) on 29 Oct 13.

<sup>49</sup>A comprehensive account on the various modalities available to judge the decision making process is available in - Fewell MP & Hazen Mark G (2005), *Cognitive Issues in Modelling Network-Centric Command and Control*, DSTO, Canberra

Speed of command includes the time required to detect objects and activities of interest—the 'observe' part of the cycle—and the time taken in implementing decisions—the 'act' part of the cycle. This essence captures the advantage of any shortening of 'observe' time by sensor networks and of the 'act' part of the loop by direct sensor-to-shooter communication. The speed of command in decision making (orient and decide) is judged by the quality and timeliness of decisions. The premise that "acting inside an opponent's decision cycle will bring success" will not work if the decisions lack quality. Bad decisions, no matter how quickly made, are still bad decisions.<sup>50</sup> What one does when inside the enemy's loop is more important.<sup>51</sup> In a given set of circumstances, a marginally sub-optimal decision made and put into effect quickly might produce a better outcome than the best decision made slowly. Also, a high speed of command, compared with that of the adversary, may enable the effect of a bad decision to be corrected by a subsequent decision before the adversary has had time to exploit the mistake.

'Soundness' is the degree to which the decision taken is the best possible. This can be interpreted in two ways: either the best possible decision under the circumstances prevailing at the time, or the best possible in an absolute sense. The first is appropriate when the focus is on the competence of the decision maker, the second when one is more interested in how improvements to the decision maker's support system and infrastructure can improve decision quality. Speed of command should not be made the predominant factor to the detriment of the human factors that are the heart of the command and control process.<sup>52</sup> Too much emphasis on the speed of command can easily lead to unsound decisions. The

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<sup>50</sup>G. Wheatley & D.F. Noble (1999) 'A command and control operational architecture for future Warfighters' in *Modelling and analysis of command and control*, NATO report RTO-MP-38 AC/323(SAS)TP/12, paper 17.

Additionally, Vego, Milan (2010), *Is the Conduct of War a Business?* asserts that NCW proponents describe the speed of command—a process by which a superior information position is turned into a competitive advantage. This concept is based entirely on a business model. He argues that the central weakness of the lockout concept is that the enemy could and would respond asymmetrically and "illogically." Moreover, the enemy would always have other options unless he was physically surrounded and threatened with immediate destruction. The concept of locking out a competitor might work in business but is highly unlikely to work in war. For example, the Israelis showed high tactical agility on the battlefield in their invasion of Lebanon in 1982. However, they still failed at the operational and strategic levels because their opponents outthought them.

<sup>51</sup>Barnett, T.P.M. (1999) 'The Seven Deadly Sins of Network-centric Warfare' *Proceedings of the U.S. Naval Institute*, 125(1) 36-9.

<sup>52</sup>Fewell MP & Hazen Mark G (2003), *NCW It's Nature and Modelling*, (Canberra: DSTO), p 20 & Fewell MP & Hazen Mark G (2005), *Cognitive Issues in Modelling Network-Centric Command and Control*, (Canberra: DSTO), pp 15-18.

insistence on achieving information superiority and speed of command at all levels of command is an adverse impact of technology on conduct of warfare. The time gained should be used for information processing and planning at the appropriate level of command while allowing for self synchronisation and self organisation at the tactical level.

The military has to get the aspect of technology aided capability development right. Like NCO, the Young School theory (Jeune École) emerged as a response to rapid technological changes and espoused the netting of naval forces through the electric telegraph and signal stations. This advanced a new concept for attack and defence of the coast, consisting of a network of "sleeping" torpedoes and land-based defences, combined with the use of ram ships, floating batteries, gun boats, and high-speed torpedo boats supported by armoured ships. These theories had highly negative consequences on French fleet construction and personnel policies in the run up to World War I. The French Fleet remained ineffective and out of action as the enemy refused to close the coast while effectively blockading French ports and trade. The underlying fact is the flawed argument that the ever increasing effect of scientific advances and machines made the role of human and moral factors in warfare irrelevant.<sup>53</sup>

## Conclusion

There is much potential in netting forces, but how much of it is successful will depend on the sound and skilful application of tenets of operational art. Martin Crevald, writing in 1985, well before the advent of NCO, clearly refers to the central military problem that NCO seeks to address. Confronted with a task and having less information available than is needed to perform the task, an organisation may react in either of two ways. One is to increase the information-processing capacity, the other is to design the organisation, and indeed the task itself, in such a way as to enable it to operate on the basis of less information. These approaches are exhaustive; no others are conceivable.<sup>54</sup>

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<sup>53</sup>Vego, Milan, (2003), "Net-Centric is not Decisive", *Proceedings of the Naval Institute* 129:1, Jan 2003, pp 52-57 and discussion with the author at Naval War College, Goa in Nov 14. For a more detailed analysis of interplay between Network Centric Operations and Jeune École see Dahl, Erik J. (Autumn2005), 'Net Centric

<sup>54</sup>Crevald, Matrin. V. (1985), *Command in War*, (Cambridge MA: Harvard University. Press), p 269.

The development of NCO, in isolation, is clearly the selection of the first option based on the premise that more information means less uncertainty. While NCO has relevance in its ability as an enabler; the role and importance of human factor in conduct of war remains pervasive. Uncertainty stemming from factors like inadequate information processing capability, differences in assessment at different levels, and most importantly the difficulty of predicting what the enemy will do, shall always prevail, i.e. the human/ emotional factor continues to be predominant. This is the *raison d'être* for operational art and the continued relevance for levels of command despite the significant advancement in networking and the ability to exercise command and control over a wide span. The primary challenge of NCO would thus not be the technology, but rather, integration of the human dimension into the network and that is where doctrine and training ought to focus.



### ***About the Author***



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