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Exploration of the ethical dimension of Network Enabled Operations: Toward a philosophical framework of analysis.

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Christine van Burken (MSc)
Delft University of Technology

Peter Essens (PhD)
TNO Defence, Security and Safety - Human Factors

Point of Contact:
Christine van Burken
Delft University of Technology
Technology, Policy and Management
Philosophy and Ethics
P.O Box 5015
2600 GA Delft, The Netherlands
+31 6 29 22 22 74
c.g.v.burken@tue.nl

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Abstract

The transformation to Network Enabled Operations (NEO) is based on a vision of intensive military cooperation and information sharing by making use of network technologies. Underlying this vision are moral assumptions on how people will behave when operating in a network. The current status of NEO research leaves out the ethical dimension of working in a highly technologically mediated environment. Also research on military ethics does not take into account the way technology possibly affects moral behaviour. Therefore there is a need to develop a philosophical framework to analyse NEO. Philosophy of technology serves as a background to study the role of technology when making moral decisions. A framework developed by Herman Dooyeweerd called ‘multi aspects’ analysis is used to explore the coherence, unity and diversity in which NEO functions in practice. An analysis of NEO in terms of the 15 aspects is presented. Implications from this analysis for empirical research to study specific problems and ethical issues in NEO are discussed.

Preface

Philosophical analyses directed to human behaviours in the context of Network Enabled Operations (NEO) are rare. We believe however that for a full exploitation of the added value of NEO, ethics and morality should be addressed more seriously. The soldier need to deal a wide diversity of perspectives and multiple interests of the parties collaborating in comprehensive, networked operations. In a research program called “Moral fitness of military personnel in a networked operational environment”¹ philosophers, psychologists, and social scientists study from diverse perspectives role and behaviours of the human in the network and the ethical dimension of network technologies. This paper is written from a philosophical viewpoint aiming to explore concepts that may provide a better understanding of the complexity of real life issues.

Introduction

The Military is increasingly making use of network technology to facilitate cooperation and information sharing within and between their organisations and also with non-military agencies. In these complex and ad-hoc, multinational settings, the label Network Enabled Operations (NEO²) is used to describe the added value of a

¹ Royackers, L., Essens, P. & Verwey, D. Moral fitness of military personnel in a networked operational environment. Research grant (2009-2013) received from the The Netherlands Organisation for Scientific Research (NWO) under the Research Theme: Responsible Innovation.

² We use the term NEO or NEOps equivalent to NEC (Network Enabled Capability), NCW (Network Enabled Warfare), NBD (Network Based Defence), and the like.

well-networked organisation. In essence, the potential of NEO is to achieve enhanced military effect through the better use of information and collaboration. The development of the NEO paradigm is relatively recent and no image of an accepted end state is established yet. Currently, there has been done quite some research on the technical, social and organisational side of NEO³, but there is hardly any literature on the ethical consequences or normative dimensions of working in a NEO environment. We argue that we should address these questions in close relation with the further development of NEO. NEO is based on an extensive technical capability to share information. But its realisation depends in three essential elements on human decision making processes in NEO: sharing of information, sharing of purpose (planning and decision making), sharing of resources – while being distributed in the network. The technical environment of NEO which facilitates the distribution of information and interaction between the parties, real time, has specific effects on that interaction and how the operational environment is conveyed to the participants. Collaboration is the central premise of NEO. The focus of our analysis is how technological mediated interaction affects collaboration and decision making. A central question for the analysis is: Are the traditional military virtues, such as courage, loyalty and duty still valid in this new setting, or should we perhaps redefine or replace (some of) them? Therefore, this paper seeks to address the current status of ethical research on the topic of NEO and also tries to give a perspective on how such research could be performed. We are investigating which operational and societal demands should be studied that are currently left out in the development of NEO. The philosophy of technology will serve as a theoretical background, because the research concerns an operational organisation reality that is strongly technology-mediated. One of the objectives of this paper is to work towards a philosophical framework to create new perceptions, elicit new approaches to problem solving and even form a basis for organisational and training objectives in order to advance the development and effective application of NEO.

The outline of the paper is as follows. We will start with a clarification of the terminology that we are using with regard to the ethical notions. Secondly, we give an outline of the literature research and follow with arguments about what is lacking in the current status of academic literature on NEO. This is followed by the introduction of a philosophical framework and entails a provisional multi-aspectual analysis of NEO, which is strengthened with some empirical data. We conclude with arguing why a multi-aspectual analysis can be helpful in eliciting normative issues and provide recommendations for further research.

Clarification of terminology⁴

³ See e.g. Ferris 2003, Warne *et al.* 2004.

⁴ Definitions are taken from *Free online dictionary* (www.thefreedictionary.com/) and Merriam-Webster (www.merriam-webster.com) date accessed: 19 januari 2010 and Jochemsen, Glas and Hoogland, *Verantwoord Medisch Handelen* (1997)

Morality, ethics, normativity are phrases that are sometimes randomly used to express issues that have something to do with good or bad behaviour, dilemma's and responsible actions. When we speak about 'ethics' in this paper, it is about the set of rules or standards governing the conduct of a person, a group, or the members of a profession. For example military ethics is the set of principles according to which every soldier should align his or her behaviour. It is about what principles are valid in specific situations. These ethical standards can differ from culture to culture and have also changed throughout history. With 'moral' we mean the judgment of good or bad in human action and character, in particular apparent when the situation is not very clear with respect to what should be done. It relates to being a virtuous person, or whether one has developed the right character traits. 'Normativity' has to do with norms that hold for certain actions in a certain context. Norms differ from rules, because they do not always have to be explicit and people do not necessarily phrase them, but they can be implicit, or part of someone's 'tacit knowledge' and say something about how things should be done in a good manner.

Status of research on ethics and NEO

To our knowledge there is little literature on military ethics in a NEO context. Several authors, in particular from the US Army, have published on moral virtues and skills in the military (e.g. Cook (2008), Lucas and Rebel (2006)). We will provide an overview of what we have found to be relevant and useful in the development of a framework for studying moral issues in decision making behaviour of military personnel in a NEO environment. Since we plan to gathering empirical data on moral decision making behaviour, we also looked for empirical data in literature that can inform the development of the framework. The literature search in different military databases and databases on ethics (e.g. *Journal of Military Ethics*, Proquest Military Database, and Google Scholar) on moral competencies of military personnel resulted in three categories. These are (i) *Philosophical discussion on military virtues*, (ii) *Empirical behavioural research on networking militaries* and (iii) *Empirical research on virtues and moral competencies of militaries*.

Our findings for the different directions are described below.

(i) Most recent articles on military virtues are published in *Journal of Military Ethics*. Even a special issue was dedicated on virtues in 2007 ("Virtue Ethics and Military Ethics,"). However, no attention was paid on how these virtues affect decision making of militaries working in a highly technological situation in which the Defence organisation finds itself today, or how these technologies affect moral behaviour. Robinson *et al.* (2008) provides a helpful overview of the different sets of virtues per nation in their book on ethical programmes at different international military academies. They even discuss the (lack of) theoretical underpinnings and question the usefulness of teaching virtue ethics. Robinson's overview is relevant for research on NEO, because working in a NEO environment implies working in multi-

national settings. Awareness of the different military virtues and how other nationalities value them might support productive cooperation.

(ii) There are a few recent articles that focus in on the human component of NEC, especially in Australia in the team of Warne, but unfortunately their publications are restricted to reports and publications in proceedings (e.g. Warne, 2004). Also, the publications of Warne are mainly psychological, social and behaviour focussed and do not address the ethical questions in depth. Some (empirical) work on psychological and behavioural issues is also published in proceedings of the ICCRTS (International Command and Control Research and Technology Symposium), but none of them focuses explicitly on ethical aspects of NEO. With this paper we would like to elevate the discussion on moral implications of working in a Network Enabled Capabilities (NEC) environment to the academic floor.

(iii) A relevant academic publication is from Matthews *et al.* (2006), who empirically studied character strengths and virtues of military leaders. Again, his research does not take into account the changing of the military practice into a much more technological and network enabled environment. Also, the research was done with military leaders on the level of military academies (cadets) and this is mostly the case. But especially in a NEC environment where the boundary between the officers and the militaries in the lower echelons seems to blur, it is important to take into account the lower echelons as well. Although the NEC environment is not specifically mentioned, Matthews addresses another issue that is important in a NEC environment, which is the multinational component of joint missions. The difference in values and the ranking of them might cause problems in the cooperation between militaries in multinational operations (2006:s65).

What is a missing element in NEC evolution? The studies that we have mentioned above focus highly on virtue ethics, which seems the most popular way of talking about ethics in the military. In recent work done by Robinson *et al.* (2008), we can find some critique on the current status of research on military ethics and they argue that the teaching of military ethics should go beyond traditional teaching of military virtues. Also Olsthoorn (2009), who is involved in ethical training programs at the NLDA⁵, argues that we should rethink the way we are teaching ethics to military personnel. This critique comes from within the military academies and what Olsthoorn advocates is a need for a new and academically underpinned approach to military ethics. He refers to Gabriel who states that “the possession of a virtue is a disposition to behave well, yet in itself this is not sufficient to guarantee that someone will behave ethically (1982: 8-9, 150, 152). Olsthoorn’s appeal to rethink military ethics supports opportunities to develop a framework to address ethical issues within the context of NetCentric Operations (NCO). This framework should inform the Defence forces on what kind of soldier is ‘morally fit’ to work in a NEC-environment. It might provide guidelines about the necessary mental and moral capabilities for future soldiers who work in a highly technologically mediated military

⁵ Netherlands Defence Academy

practice. Subsequently, recommendations on ethical training and mission preparation can be provided to the military academies and operational forces.

We have argued that the current status of research is insufficient to give an answer to the development of NEO and the human role regarding moral decision making in collaboration. The arguments for further research are inspired by technological, social and ethical considerations.

Firstly, there is an increased shift in focus to *technologically* mediated ways of communications and interactions. The basis on which militaries make decisions is changing from “information that has reached the soldier via the hierarchical line of command using face-to-face or radio communication” into “information that has reached you via the network using sensors and information technology”. In short, the nature of information communication technology has changed, from voice to chatbox functions or direct visualisations. Secondly, the organisational way in which the soldier works changed from a hierarchical, platform centric organisation into a netcentric organisation, which is assumed to be less hierarchic (see also Schmidtchen, 2006). This affects lines of command and accordingly affects responsibility for decisions being made by the soldier. A phrase that strongly conveys this change is ‘power to the edge’ used by Alberts & Hayes (2003:4):

“With power to the edge as our mantra, we see the soldiers, sailors, marines, airmen, and civilians [...] all connected by a network that they can trust and that can facilitate the building of trusted relationships. Empowered by access to quality information and unconstrained by artificial boundaries and stovepipes, there is no limit to what the men and women [...] can accomplish.”

Such a way of working is a social change with ethical implications. The effects of introducing network technologies on behaviour as well as the organisational prerequisites to work in a networked environment need to be studied in order to train future soldiers in this new organisational setting. The third argument is inspired directly from an ethical perspective. It more or less evolves from the technological and social changes mentioned in the first two arguments. The moral demands in terms of responsibility that are put on the shoulders of the soldiers have changed by the introduction of NCO. Traditional moral training focussed on dilemma training especially from a person-to-person perspective (e.g. in the Srebrenica cases where the moral dilemma’s were human-human or human-organisational in kind). In the NEO paradigm, the soldiers face a human-technology-human relationship in which they have to make moral decisions. Technology mediated relationships have been addressed by philosophers of technology, such as Achterhuis, Ihde and Verbeek. Verbeek states that “when technologies are always influencing human actions, we had better try to give this influence a desirable form” (2006:371). The influence of technology on human behaviour is present, even if we are not always aware. The fence in front of a cashier to make people stand in a line, instead of crowding together, is a very basic example of using technology to enforce desirable human actions. What Verbeek and other philosophers of technology advocate is that

technologies can also force people to behave morally more or morally less desirable. The designers of technologies have made implicit ethical decisions, aware or unaware. The safe button on a weapon is such a design choice, which gives a soldier the possibility to load a weapon without running the risk of accidentally firing a shot. It forces a soldier to perform two steps: ‘unlock’ and ‘pull the trigger’ before he can reach the desired effect. If we follow Verbeek’s argument about the influencing role of technology, it becomes clear that also NEO technologies might either support or erode moral decision making behaviour of military personnel. In the course of the paper we will work towards a framework which should help understand the ethical dimension of NEO in a military practice. NEO technologies are shaping the military practice and in turn, the military practice shapes the way people deal with these technologies. In our opinion we should not only have an understanding of how these technologies influence human behaviour, but also address these issues from a normative point of view. Therefore we argue that performing a normative analysis of the social practice in which the NEC technologies are used, helps to understand how NEC users can perform their tasks in a manner that does justice to the normative dimension of the military practice. This analysis can also give guidance to the development process of NEO by creating an awareness that technologies can be designed in a way that it bests support militaries in doing their jobs in a good way, which goes beyond the practical functionality of NEC.

Philosophical Framework

In most publications on NEO or military ethics, the potential influence of technology on the decision behaviour of its users is ignored. This influence can be on the level of trust in technology, the way scripts are programmed, user plans and manuals are written. In short, how people deal with technology and how it affects their moral behaviour is mostly overlooked in the military context.

Philosophers of technology deal with these questions in general. Feenberg (2002) for example looks at the societal influence of technology and Ihde (1991) searches for concepts and perspectives that deal with hermeneutical relationships between humans and technology, how technology gets meaning in an anthropological sense. Other relevant contributions in philosophy of technology are available for specific civil technologies, for example by de Vries (2005), Strijbos and Basden (2006), Verbeek and Slob (2006). They analyze the complex relationships between different technologies and society or human behaviour. De Vries, Basden and Strijbos make use of multi-aspectual analysis to analyze reality and in this paper we will adopt this approach to analyze (NEC) in the military forces. This approach has proven to be helpful in several research areas such as Information technology (Basden (2010)), Systems Thinking (Strijbos and Basden (2006)), Health Care (Glas and Jochemsen (1997)), Organizational Sciences (Eriksson (2007)) and Design studies (Verkerk, Hoogland, de Vries and Van der Stoep (2007)).

Background for the philosophical framework

The philosophical background for the multi-aspectual theory, initially developed in the late 30's by Dutch philosopher Herman Dooyeweerd, is not a closed system or a fixed arrived philosophy, rather it is open to critique and adaptations. It is an approach to analyze reality in order to get a better understanding of the world in which we live. It should therefore not become an end in itself, but be used as a philosophical tool which can support the military practice. One of its main characteristics is that it tries to avoid technocratic reasoning or a one-sided phenomenological philosophy. It connects these different approaches, by developing an analytical instrument to gain insight into complex structures of reality. The framework consists of 15 aspects by which reality can be analyzed. Dooyeweerd, who introduced this 'multi aspects' - theory to analyze reality, has argued that naïve experience, the starting point of phenomenological reasoning, and scientific reasoning do not necessarily collide.

Some philosophers have used his philosophy to develop a philosophy of technology, for example Van Riessen (1949). Unfortunately, he hardly ever published in English and therefore his philosophy of technology (called Reformational Philosophy of technology) is almost not known internationally. Schuurman (1980) however did publish in English, and he uses Dooyeweerdian terms such as modal spheres and entities, subject- and object-functions, foundational function and qualifying function in order to understand modern technology.

Dooyeweerd claims that reality can be analyzed in terms of 15 aspects, or modes of existence (see his *New Critique*, Vol. I, p.1)⁶. An overview of those aspects can be seen in Table 1.⁷ Any entity exists in all of these modes: it has a numerical existence, a spatial, a kinematical, etc.. According to Dooyeweerd these modes or aspects of being show a certain order: each 'higher' aspect presupposes the existence of the 'lower' aspects. For example: the spatial aspect cannot exist without the numerical (because we have one, two, three, etc. dimensions). Similarly, the biotic aspect cannot exist without all previous ones (life presupposes the possibility of energy conversation and movement, and movement cannot exist without space). His followers have had many debates about the proper order of the aspects, and nowadays several of them take a fairly pragmatic approach and leave the exact order of the higher aspects aside. There has been especially much controversy about the status of the historical aspect. Dirk Vollenhoven, one of Dooyeweerd's colleagues, for instance, challenged the idea that the historical (or developmental) aspect should be regarded as a separate aspect. In his opinion the concept of time, which overarches all aspects, should be seen as the proper conceptualization of development. Here the historical aspect is treated as the formative aspect, taken as an expression of the fact that artefacts are realised in a developmental way. This formative aspect was first introduced by Vollenhoven (in: Van Woudenberg (1992:94)). Van Riessen uses the term 'historical' (1949:505),

6 Dooyeweerd (1953-1958), *A new critique of theoretical thought*, Vol. I *The necessary presuppositions of philosophy* – (1953), The Presbyterian and Reformed Publishing Company, Philadelphia

7 for further reading on the aspects theory of Herman Dooyeweerd, see: Van Woudenberg, (1992), *Gelovend denken: Inleiding in een christelijke filosofie*, Kok, Kampen, pp. 66-118

Schuurman calls it ‘cultural-historical’ (1980:9) and one could use the term ‘cultural’ or ‘developmental’ aspect for this too. Network enabled technologies are brought forth by the formative power of human actions. It is part of cultural development. This view contradicts deterministic claims that military technology drives history and human actions are more or less subject to this driving force, as we can find it in works of cultural philosopher Virilio (*The Information Bomb* (2000), *War and Cinema* (1989), *Speed and Politics* (1977)).

Table 1. Aspects of reality and their manifestation according to Dooyeweerd (free to De Vries (2005) and Bergvall – Kåreborn (2006)⁸)

Aspect	Application
1. Numerical	Discrete quantity
2. Spatial	Continuous extension
3. Kinematical	Motion
4. Physical	Energy
5. Biotic	Vitality
6. Psychic/sensitive	Feeling, sensing
7. Logical/analytical	Analytical distinction
8. Historical/formative	Human formative power
9. Symbolic/linguistic	Symbolic representation
10. Social	Social intercourse
11. Economic	Frugality
12. Aesthetic	Harmony
13. Juridical	Justice
14. Ethical	Love
15. Pistic	Faith

A way to better understand NEO is to analyse these 15 aspects of table 1 for NEO conditions and by doing so give an account for the coherence, unity and diversity in which NEO functions in practice. It can help to understand how people relate to network enabling technologies and that introducing such a technology may introduce challenges or generate specific expected behaviours of users. An important feature of the multi-aspectual framework is that it assumes an irreducibility of the aspects⁹. One cannot reduce a higher aspect down to a lower aspect. One cannot reduce the sensing of sunrays on ones face (psychic aspect) to movement of molecules (physical aspect), because in doing so one does harm to the richness in which people experience reality. Of course we can explain the sensing of sunrays in terms of movements of molecules (which science does all the time), but it can never be a full or ultimate explanation of what happens in reality. Therefore being aware of this irreducibility might help

⁸ Bergvall- Kåreborn (2000) ‘Qualifying function in SSM modelling - A case study’ in: *Systemic Practice and Action Research*, Vol 15, pp 309–330

⁹ The multi-aspectual analysis claims that the aspects are irreducible, but also that they are ‘interlaced’ in reality. We will not explain this notion of ‘interlacements’ in this paper, but focus on the irreducible character of the aspects. Of course the interlacement is of high importance too in NEO.

further development of NEO. Another example of what can go wrong if one disrespects the irreducible character of the aspects is Zeno's explanation of Achilles and the tortoise. Zeno argues that the tortoise will always be more ahead of Achilles, because during the time that Achilles arrives at the point where the tortoise was, the tortoise will also have moved a distance, so they can never arrive at the same point. But intuitively we all know that Achilles will overtake the tortoise at a certain point. Zeno explains movement only in terms of distance and reduces movement to the spatial aspect, instead of acknowledging that movement should be explained in the kinematical aspect, where time is added to distance.

For the analysis of NEO one should be aware of this irreducible character of the aspects. Without performing a full in depth analysis, one can already understand that working in a network environment has a spatial aspect, which is the sharing of information over distances. It also has kinematical aspect, because the sharing of information is done by the speed of download rates; it has a psychological aspect, which is expressed in the way people feel about telepresence; a logical aspect is expressed in the software scripts which make the networking capabilities possible, etc. An example of a possible problem of neglecting the irreducible character of aspects in a NEO environment arises if one disrespects that sensing is a psychological aspect of NEO which cannot be reduced to the physical. Here we need a living being for the interpretation of the sensed. This is confirmed by an explorative case study in which we interviewed a senior search advisor (a lieutenant who advises the ground patrol on where to search for IED's). He had difficulties with cooperating with the image analyst, because this person could not interpret and translate the event on the photograph in a way that it made sense for a military search advisor. The search advisor knew what was a 'logical' location for an IED in the real world and this feeling could not be directly created from the image and the explanation of the image analyst who was not trained outside the office. This observation confirms that the specific roles and skills of the image analyst and the search advisor cannot be reduced to one, but they have their own internal structure, which seems to be overlooked in the development of NEO. These specific roles, but also their intertwinement should be respected in a NEO environment, because problems arise exactly where different roles and responsibilities clash. Communication in a social environment cannot be reduced to the sharing of pictorial or lingual symbols, but it is always embedded in some form of social interaction, which is needed before one can give meaning to the data that is communicated. If a random person would be ordered to sit at a Battle Management Console, without knowing that he or she is in the social context of a military practice, this person can hardly give meaning to the dots and bleeps and abbreviations shown on the screen. The full potential of BMS (Battle Management Systems) can be disclosed only if it resonates the intrinsic normativity of the practice in which it functions.

Performing a 'multi aspects'- analysis can help elicit user problems regarding human functioning in a NEO environment. This analysis shows that NEO functions in a

diversity of aspects and these aspects refer to one another. Also, explicit and implicit norms and rules are connected to working with networking technologies, which developers and militaries should take into account. Subsequently, experimental cases can be picked in such a way that they explicitly study the bottlenecks ensued from the multi aspects analysis.

Cohering the aspects

What Dooyeweerd advocates is that the aspects should not be seen as isolated things. They are aspects *of* NEO and cannot exist by themselves. Therefore, isolating aspects and performing in depth studies into one of the aspects is very helpful, but one should always get back to the coherent unity in which NEO functions in reality. For developers of NEO it can be very helpful to perform an aspectual analysis. For making informed decisions about NEO one needs to bring the aspects back in the reality in which NEO functions. Dooyeweerd has developed other concepts which can help distinguish which aspects are more important and which are less important. These concepts are object functions, subject functions, qualifying function, foundational function, retrocipations, anticipations, disclosure, etc. In the following section we will explain and use these concepts. It is important to keep in mind that cohering the aspects, or in other words, moving from the theoretical multi-aspectual analysis back to the reality of every day life, is when the different aspects get their meaning. Also the normative dimension becomes visible when we describe the military practice in terms of a normative practice, by making use of the aspects. We will first elaborate on the concept of a normative practice, because this is the context in which actions take place and in which the NEO paradigm functions. It is important to have an understanding of the context in which NEO takes place, because only then we can see what the specific role of NEO is and understand how it relates to moral decision making in a military practice.

Military practice

American philosopher Alasdair MacIntyre introduced the concept of ‘practice’ in his book *After Virtue. A Study in Moral Theory*. He developed a theory of ‘social practices’, in which, according to Verkerk, Hoogland, van der Stoep and de Vries (2007:247) he aims at a meaningful coherence of human actions in which certain ‘values’ are being realized. According to MacIntyre, the definition of a ‘practice’ is (1984:187):

“Any coherent and complex form of socially established cooperative human activity through which goods¹⁰ internal to that form of activity are realized in the course of trying to achieve those standards of excellence which are appropriate to, and partially definitive of, that form of activity, with the result that human powers achieve

¹⁰ The term ‘goods’ should be understood here not as a commodity, but as an internal value of practice, such as gaining experience, developing skilled behaviours, experiencing joy in excellence.

excellence, and human conceptions of the ends and goods involved, are systematically extended.”

Practice is a form of socially established cultural activity, which entails that the practice existed before the individual enters the practice. The socially established organisational form of the military practice is characterized by hierarchy and the explicit use of ranks. It has evolved from a societal need for security, is rooted in society, but in a way it is not completely absorbed in civil society. In a democratic state, the people have delegated the monopoly on the use of force to the military for the protection from external threats and the police for internal protection of the public. Therefore one can say that the military practice functions on behalf of civil society. We distinguish civilians from soldiers, salesman and airmen with regard to some fundamental issues, e.g. there is a special set of laws, such as military discipline, under which soldiers do their job.

A keyword is the notion of internal goods. MacIntyre himself uses the word ‘goods’¹¹, According to MacIntyre, those goods can only be achieved through participation in that specific practice and such goods must have historically evolved standards of excellence internal to them. Internal goods or values say something about what the practice is about. In the military practice it is about promoting and safeguarding a just society, by which legitimate use of force is allowed. ‘Justice’ is what we call the value, or the internal good, and not the use of force. The use of force is bound by military and international law; one is not merely allowed to shoot just because one is a military member. This differs for e.g. a baker, who is not in the first place bound by juridical constrictions to bake bread, but by doing his job he is first of all bound by the laws of chemistry, such as the mixture of yeast and flour and influence of temperature on the dough. If he disrespects these rules he will not do justice to the value of the practice of a bakery and not bread, but some bad tasting substance will arise from his actions.

According to MacIntyre, virtues are those human capabilities that allow us to pursue practices and therefore aim for the goods internal to those practices (1984:191). The ‘standards of excellence’ for the military practice are expressed in codes of conduct, Geneva Conventions, and International Laws of War. They are expressions of how military actions ought to take place in a most excellent way. If we apply MacIntyre’s definition to the military practice we can call soldiers who strive for excellent behavior therefore virtuous soldiers. They are even openly rewarded with a decoration, which is a gesture of great value in the military practice.

¹¹ A related, preferred used concept comes from Cusveller (2004:181) and the writers of Denken, Ontwerpen, Maken [*Thinking, Designing, Constructing*] (Verkerk, Hoogland, van der Stoep and de Vries, 2007:247) who speak about values, or better: ‘something of value’. This can be concrete or abstract, e.g. a harvest or a pleasant dinner.

MacIntyre's theory about a social practice is helpful to get a better understanding of human actions, but it is not always helpful to distinguish what belongs to the social practice and what does not. His concepts internal and external goods are insufficient to do justice to the complexity of practices (Verkerk, Hoogland, Van der Stoep and de Vries 2007:255). See also Verkerk and Zijlstra (2003) who argue that the distinction between internal and external goods is artificial, because in concrete practices, these values are much more interwoven: a doctor is providing care and receiving salary.

We would like to show a different view on what MacIntyre calls internal goods of a practice, and use the term intrinsic normativity, or inner nature of a practice, as it is presented by late philosopher Herman Dooyeweerd. Intrinsic normativity is about the structural conditions that are given beforehand, or the ties by which the practice is naturally bound. Intrinsic normativity is not only about internal goods, or what is specific about a practice, but also about the guiding principles of a practice. We can make a distinction between structure, context and direction of a practice (see Mouw and Griffioen, 1993). This plurality of notions provides a more coherent approach to social practices. Intrinsic normativity is about the structure and direction of a practice. The 'contextual' practice informs about the intrinsic normativity. The 'structure' of a practice refers to the formal aspects of the organisation and they are different for different practices. The internal organisation of the technical practice differs from a medical practice, and also the military has its own structure. These differences in structure are mainly caused by differences in the primary processes that drive these practices.

'Context' points at the environmental and cultural differences that have shaped the practice in its historical development. The US Army differs from the French army, and also an Asian Defence force has a different 'colour' due to cultural differences.

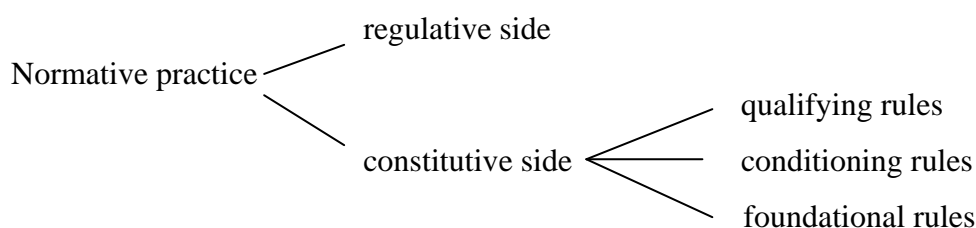
'Direction' refers to the different basic convictions that drive people to perform their tasks in that practice. In the military practice this can be seen in the different approaches to the use of force, for example the American approach, which historically tends to focus on technological superiority (e.g. the quick invasion during Gulf War I) differs from the Dutch approach which is to 'win hearts and minds' of the local people. It also becomes visible in classic writings on how to perform a war in a good manner, for example Clausewitzian defence models differ from non-western military models, such as Sun Tzu's Art of War. 'Direction' is about one's deepest understanding of the actions that one performs, for example if one is using force to 'win a war' or to 'bring stability' in a specific region.

According to Verkerk, c.s. (2007:256) the rules that belong to a specific practice determine the structure of a practice. Adding context and direction influences the positivation of the rules and the direction influences the way the rules function in a practice.

Structure of a practice

The structure of a practice is characterized by the rules for actions. These rules can be constitutive or regulative. See also Figure 1. According to Jochemsen, Glas and Hoogland, the constitutive rules are defining and constituting the practice. It are the rules that define the structure and boundaries of a practice. Three constitutive rules can be distinguished: foundational, qualifying and facilitating (Verkerk c.s. 2007: 257).

Figure 1 *The normative structure of a social practice* (Jochemsen, Glas and Hoogland, 1997)



Disclosure or opening up of the practice takes place by human actions, it is the formative cultural activity that takes into account the structural limits given in reality, and at the same time opens up new possibilities.¹²

If we look at the military practice: what is the inner nature of this specific practice? Or in MacIntyre's terms, what are the ends and goods of the military practice? According to Van Riessen, a philosopher of technology and student of Herman Dooyeweerd, '*a soldier is someone who, in service of the government, exercises power of weapons in an organised manner to promote justice* (Van Riessen 1963:8). The military practice is the pre-given framework in which a soldier fulfills his or her task. It is the exercise of power of weapons in an organized manner to promote justice. In the Dooyeweerdian view the state has this right to use force, but within the borders of the law (Zwart 1994:65). Ideally, the state is an internal monopolistic organization of the power of the sword over a particular cultural area within territorial boundaries. According to Dooyeweerd there has never existed any state whose internal structure in the last instance was not based on organized armed power, at least claiming the ability to break any armed resistance on the part of private persons or organizations within its territory. In Dooyeweerdian terms, armed power is the typical *foundational function* of the state, but armed power can never be its *qualifying function*, for the state as a 'res publica' is always in need of the subordination of its armed force to the

¹² More about intrinsic normativity can be found in Strijbos (2006) 'Disclosive Systems Thinking' in: Strijbos, Sytse and Basden, Andrew (eds), *In search of an integrative vision on technology*. Dordrecht: Springer Verlag. pp. 227- 247.

civil government in order to guarantee stability of its public legal order which is characteristic of a state (Zwart 1994:63).

The term foundational functions tells something about how the practice came into being. The concept qualifying function 'is a modally defined concept that refers to the function that characterizes an entity, determines its inner structure, and makes us experience a specific identity in relation to this entity despite all the changes that may occur to it over the years. As such, it can be seen as the manager or foreman of the internal structure of a particular thing and is, therefore, sometimes also referred to as the guiding or leading function' (Bergvall-Kåreborn 2002:313).

Aspectual analysis of NEO

A provisional aspectual analysis of NEO shows already where relevant issues can arise with regard to human functioning in NEO. In this section we address only these aspects that might be important for further research.

The kinematical aspect of sharing information, or 'distribution of information' has changed in the NEO paradigm. In more ancient times the telegrapher or the reporter physically had to move himself from one position to another position to deliver a message from the battlefield. Nowadays the sender, messenger and receiver are static and underlying network technologies provide possibilities of sending and receiving messages instantly and simultaneously. Receiving information has become retrieving information. The question can be raised as to whether doctrine and strategy have taken this change into account.

The physical aspect relates to energy sources, such as batteries. Explorative case study research shows that this item comes back several times as a pregnant problem. The Forward Air Controller sometimes chooses to leave all his high tech portable IT systems simply because it saves on weight of batteries. Also, a NEO is highly vulnerable for electricity cuts or drained energy sources and one should think about the consequences for militaries if this happens.

Literature study's and experimental cases pay attention to the psychic aspect of NEO. According to Dooyeweerd, the '*emotional aspect of experience*' (NCII, 112) relates to feeling. A result of NEC is the distance it creates on the battlefield. An UAV pilot controls his plane in Afghanistan from an office seat in the USA. He does not feel the stress or hear the bullets flying around in the same way as his colleagues in the war zone do. A sense of being tele- present plays a role here, as well as other relations between technology and the way militaries sense the world around them. Unfortunately, sad cases are known where things go wrong in this aspect, which is the 'predator view' on situations visible on a screen. This is a psychic effect of focussing on only one (misleading) detail that is shown on the screen, resulting in making wrong decisions in the chain of command. Empirically studying this phenomena of the 'predator view' and also 'micro-management' might provide insights on how people act upon information that is available and not specifically meant for them,

but for colleagues elsewhere in the network. The logical, or analytical aspect, is of importance too. Working in a NEO environment requires certain analytical skills. Also the interpretation of data provided by the network might require more logical and analytical qualities of military personnel than in the hierarchical situation. In Dooyeweerd's philosophy the analytical aspect relates to distinguishing (see De Vries 2005: 70). A NEO environment should contribute to distinguishing who is friend or foe, which weapons or weapons systems are available, etc. Or as the senior search advisor expressed in his interview when we asked him about what kind of soldier is needed to work in a NEO environment where databases become more important: “[...] a person should *understand* that [the input he enters into the system is important and matters for the bigger picture]’.

The historical aspect relates to the development of the NEO paradigm. Underlying assumptions about information superiority on the battlefield and advancing command and control technologies have contributed to the development of NEO. It is also a reflection of the development in society, where social networks are a popular means of sharing information. Questions can be raised about the context in which the military network functions, which fundamentally differs from a social context, or a business context. The NEO context is inherently insecure, or with the words of one of the respondents in a NEO case study: “A fight never announces itself”. With further developments of NEO, one should be aware of this specific military context.

The symbolic aspect can easily be overlooked, but communications, which is key in NEO, relates also to the symbolic representations of situations or artefacts in reality.

This symbolic output can have multiple interpretations, depending on culture, age and training of the military personnel that is working in a NEO environment. In multinational operations this lingual aspect is important and explicit agreements are often made about what language to use for communications over the network. Also, working in a NEO environment can involve using different means for communication, for example pictures (representing a mine), audio (representing an alarm), written language (chat or email orders), verbal language (radio or VOIP communications). How does this affect the traditional hierarchical line of command where orders could be recognized by its typical formulations? Empirical research on how people recognize orders in a NEO environment might elicit problems in this area.

Several studies at the social dynamics taking place in a NEO environment have been performed. An important social aspect is the organizational footprint of the military organization, which is traditionally hierarchical. Many scientists suggest that in the case of NEO the hierarchy of the military organisation becomes less important and shifts towards a netcentric way of working. An explorative case study has shed new light on this suggestion. Some of the respondents concluded that NEO does support military hierarchy much more than the traditional way of working. In the traditional way of working, the unmediated interpersonal relationships invoked a more open working atmosphere in which hierarchy was less important compared to the new

technology-mediated relationships between people. More profound case study research could provide more insight on this suggestion.

Any military enterprise, whether it is making use of NEC technologies or not, is bound by international law. Therefore, all streams of information, automations, or other implementations in NEO might have a consequence with respect to international and military law or the rules of engagement. This might be the most difficult part, because not all juridical aspects might have been taken into account and perhaps cannot be overlooked in the development of NEO, especially not in the initial and developmental phase. Some respondents of the explorative case study research acknowledged that sometimes they had to disrespect rules regarding NATO classifications to make the NEC technology work. Investigate on what scale this happens could help juridical specialists on how to formulate rules and norms for working in a NEO environment. Also from a moral point of view we could ask more people what motivated them to break these rules. This might gain insights in what kind of soldier can work or cannot work in a developing NEO environment.

The same as for the juridical aspect holds for the ethical aspect. Since NEO is still in its developmental stage, not all the ethical consequences can be overlooked in this stage. The ethical aspect goes deeper than merely military ethics, like the Rules of Engagement or Geneva Conventions. We argue that technology is not neutral in itself, but has a certain normativity. Dooyeweerd has paid much attention to this notion of normativity and we hope to address this aspect in more detail in a paper which deals with the ethical aspect of NEO in a more profound way. NEO is not neutral in itself, and it might even affect moral behaviour in a certain direction.

At first glance, the pistic or faith aspect seems not to be profound in NEO, however, in Dooyeweerdian philosophy this aspect also relates to 'trust'. In this sense, it cannot be overlooked, because working in a NEO environment definitely involves a certain level of trust in technology. And ultimately, interpreting representations of reality via communication systems, requires a deeper underlying view of unmediated reality, or a world view. Also, in NEO it could be that a soldier on the ground is seen as merely a node in the network. Viewing soldiers as nodes in a network can be very helpful for pragmatic reasons, but reducing them to nothing more than a node in a network is a reductionistic view of the human person and does not do justice to the multi-aspectual dimension of reality in which the soldier is placed. This is confirmed by respondents, who fear to be overruled by higher commanders when all echelons can visually witness their actions through network technologies. If this 'fear' is a valid, worry can be empirically studied and help train soldiers who experience these feelings.

Conclusion

In this paper we have showed that the current status of research on NEO leaves out the ethical and moral dimension of working in an NEO environment. Also, recent

publications on military ethics do not take into account the technological dimension of the military practice. It could be helpful to develop a philosophical framework to analyse NEO. Philosophy of technology can serve as a background to study the role of technology when making moral decisions. We have made a start with the framework by presenting a multi-aspectual analysis of technology. This approach gives an account of the coherence, unity and diversity in which NEO functions in reality. Eventually, empirical research to study specific problems and ethical issues in NEO can be guided by the theoretical framework.

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