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Studies

Land Warrior. The Reconfiguration of the Soldier in the "Age of Information"

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Abstract

The U.S. Army is currently working on the development of a new hybrid type of infantryman. Land Warrior is the name for the project which aims at equipping the dismounted soldiers with wearable computers, head-up display, permanent online connection and other technical components. The idea is to link up the dismounted soldier to an information and communications network spanning the whole field of operation. This project sets the stage for the introduction of a completely new type of soldier. It aims not merely at securing a new armament technology, but the complete technical and disciplinary reconfiguration of the soldier. The project transfers to the micro-level of the soldier the whole set of expectations which the military command units and advisers have in mind as a consequence of the epochal changeover to the "Information Age". The change introduced by information technology, so the argument goes, brings with it new kinds of opponents and dangers, but also new opportunities for military strategy. It transforms the entire fabric of geo-political and armament technology. Thus it brings the need for a change of the rationality of organisation of the military: founded on the plan of a "Network-centric warfare", there is to be a programmatic re-structuring which extends right from the ideas of warfare to the design of the individual soldier. The combination of two research perspectives is used as a heuristical guideline for the empirical presentation. Fundamental assumptions of actor-network theory, and the idea that technical expectations can be seen as far-reaching "prospective structures", lead the gaze to the decisive significance of the main expectation, that of standing at the threshold of the information age. And they bring into sharper focus the idea of network-centric warfare as a programmatic analysis, which translates the technical developments into social demands made on organisational structures, procedures and cultures; and which, conversely, interprets the military definitions of situation, strategic and tactical, as a technological challenge. Drawing on Foucault's analysis of forms of governance and its further extension within governmentality studies, this not only allows a systematic treatment of the reconfiguration of the soldier which this process of change entails, it also shows how thorough-going and far-reaching are the transformations of the soldier-subject which are envisioned. And the recourse to the Foucauldian perspective at the same time shows us how a network-type coordination of action, encouraging decentrality and self-organisation, implicitly requires for its precondition a specific kind of subjectivity structured by processes of power.

1 Introduction: the Thesis of "The Postmodern Military"[1]

Land Warrior is the term given to the project of reconfiguring the soldier in a socio-technical sense by equipping him with wearable computers, head-up display, permanent online connection, and other components. Land Warrior is not merely a technical innovation along the usual lines of development in armament technology. It is much rather the innovation of a new type of soldier. A soldier-type whose formation can be seen as both a promise and a requirement, an effect and the basis, of a new military order: "Today, we are on the threshold of a new era, and we must proceed into it decisively. Today the Industrial Age is superseded by the Information Age, the Third Wave, hard on the heels of the agrarian and industrial eras. Our present Army is well-configured to fight and win in the late Industrial Age, and we can handle Agrarian-Age foes as well. We have begun to move into Third Wave Warfare, to evolve a new force for a new century – Force XXI […] Force XXI will represent a new way of thinking for a new wave of warfare." (Office of Chief of Staff of the U.S. Army, 1994; quoted in *Der Derian* 2001: 16-17).

This quote reflects a far-reaching conviction of the military strategic thinking of today. The US army leaders are taking the "Information Age" as the starting point for their situation report. Information is determining the forms of production and civilisation. The information age is producing new opponents, and at the same time it is determining the direction for one's own "evolution". This diagnosis of having arrived at the threshold of an epoch, with the new threat situation, and the state of one's own forces – all these are now to be thought of as grouped together, as one unit – such is the pivotal concept for the military situation report. The horizon of expectations, from this sense of standing at the threshold of the information age, is here translated into a programme of restructuring the military apparatus, and this finds expression at the micro-level as the reconfiguration of the soldier. *Land Warrior* is the dismounted soldier who set up for action in the setting of this new age.

Considering the case of Land Warrior, one finds a great significance in the general observation of the actor-network theory that the development of technology – be it the individual artifacts or entire technologies – always entails the design of a complete "setting", the design of "assemblies of human and non-human actants where the competences and performances are distributed" (Akrich/Latour 1992: 259). In such "settings" – in French *dispositifs* (ibid) – the roles of humans and non-humans are distributed, role expectations are formulated, moral norms are translated into technical functions and technical regulations, possible courses of action are shut off or opened up. In the Land Warrior project, these translations and attributions are linked to the idea of the dispositive, known from the tradition of Foucault theory. Foucault applied the term "Dispositives of power" (1978) to describe the lines of force, rationalities of governance, the practical knowledge, procedures and installations, which have been directed to the fashioning of specific subjects since the 18th century.[2] And this shows us the

[2] Like other theorists who are interested in the long-term structural changes of subject-formation, and who especially look at the transition from traditional to modern societies, Foucault saw in the military one of the central institutions in which the

right context for understanding the human-to-machine integration which the Land Warrior project is aiming at. Here it is not merely a case of "pre-scription, proscription, affordances, allowances" (Akrich/Latour 1992: 261), for example when one wishes to inte-grate such items as cat-flaps, street kerbing, key-rings, safety belts, and door-closers into the human activities in programmes of action (Latour 1992, 1996: 15-83). As will be shown here, Land Warrior instead aims at some-thing of quite a different order, a com-prehensive reconfiguration of technical competencies and military disciplining. The principle here is that one does not just control this or that action, but strives to work on the general capaci-ties and overall arrangement or dispo-sitions of people and machines. The rationality and full range of this recon-figuration only become clear when one sees the possibilities for action which Land Warrior opens up, as a part of a more comprehensive programme of action. And this is: to manage warfare in the Information Age. Or to put it more precisely: to re-program the mili-tary so as to make it fit for warfare in the Information Age.

In order to make clear the basic rea-soning, the calculation of the economy of force, which is driving the Land Warrior project forward, one has first to outline the processes of transforma-tion affecting the international balance of force, within the frame of which the reconfiguration of the military and the soldiers is taking place. Taking up the key idea of a transition to a "postmod-ern military", which has now become so prominent in military sociology, one

finds that there are four lines which can be identified, to describe the way this change is manifesting.[3]

Firstly, the military field of operation is governed by the perception of a new kind of threat situation. The whole set of military thinking and acting is no longer primarily focussed on the nu-clear threat and on a conventional opponent. The activities of warfare and coercion by non-government agents have developed to the point where they represent a challenge to the mili-tary of Western societies. And the brief of the military is redefined accordingly. It is no longer just a case of warfare against conventional opponents. Now the opponent can also be a criminal, a drug-baron or a terrorist. As a result the brief includes numerous opera-tions of a non-military nature: "peace-keeping", "humanitarian assistance", "counterdrug" or "counterterrorism" (cf. CJCS 2000: 7).

Secondly, there is the influence of a general change of culture which can be seen in the forming of the armed forces. There is thus the need for an adjustment to civil social develop-ments, and a number of cultural com-monplaces, dominated by masculine groupings, are undermined, for exam-ple when women are integrated in the battle-forces.

Thirdly, there is a new approach to the organisational structure which shows the armed forces in a new light. The thesis of a "postmodern military" iden-tifies a gradual erosion of hierarchies, and the fixed boundaries between types of weaponry, and between battle

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generally valid forms of governance found their model expression. Thus Max Weber (1976: 686) for example described the mili-tary as the "womb" of all discipline. And Norbert Elias (1976: espec. 263-283) also present a treatment of the structural ho-mology, mirror-imaging and partial identity of the different practices, mechanisms, technologies and guidelines of civil and military social disciplining and subject formation.

[3] Cf. the volume by Moskos/Williams/Segal (2000), which has now become a standard reference, in which the U.S. military is in-troduced as the paradigm of a "post-modern military" (Moskos 2000), and then following this model the individual aspects of the change are listed in sequence for 12 further Western nations. For the interna-tional reception of the concept cf. also Boëne (2003), and for its adoption by Ger-man military sociology the omnibus vol-ume by Kümmel/Collmer (2002).

and service troops. Thus the military programme of a "Network-centric warfare" (cf. Cebrowski/Garstka 1998; Alberts/Garstka/Stein 1999; Alberts/Hayes 2003) is found to relate expressly to the revised new context of the current type of new enterprise, where one works with de-centralised organisation, flat hierarchies, modular and task-oriented co-operation, virtual teamwork, lean production, and precise logistics. The military network concept, in an analogous way, sees the possibility of operating with flexible, task-specific procedures, and units put together in an ad hoc way. The military has to view itself, in fact, as a "network-centric enterprise" (Alberts/Garstka/Stein 1999: 89).

Fourthly, the forces of globalisation, with the loss of state sovereignties that they entail, are having their effect on the constitution of armed forces. The missions are increasingly carried out at the request of international instances, in co-ordination with other armed forces, in an arrangement with non-state organisations; indeed the troops themselves are often made up of international, and not always military, forces.

The basic forces guiding the reorganisation of the military can be determined by a reference to the thesis of the postmodern military. However, the term "postmodern military" suggests an observation of the transformation process in the military field made within a given, static typology. The typology defines observed trends of the change as factual elements of a new type of organisation, instead of analysing the process of its (potential) constitution. What is ignored by this form of analysis is a fact which immediately springs to mind when one has the perspective of discursive analysis: the expectations, plans, programmes and projects which are formulated, drafted and set in motion by the advisors, officer units, programme leaders, project developers, – they are all clearly bound and tied up to techno-

logical factors. The first point here is that right at the outset the military views itself as in the midst of a transition not to the "postmodern", but to the "Information Age", and naturally it then sets about handling the central components of its transformation process accordingly, from this starting diagnosis.[4]

It is this aspect which we will now take up as the fifth line of influence: technology defining the scope of military reorganisation and ultimately that of the new dismounted soldier. It will be presented in three stages in the following sections. (2) Firstly one needs to clearly establish what it means if the expectations for future development are centred on information and the information age. (3) Following this course of approach, we show how the expectations are linked to the planned idea of a network-centric warfare which attempts to combine a technological transformation with a reconfiguration of military organisational structure and organisational culture. (4) Finally the project of the reconfiguration of the soldier will be studied in its following aspects: (4.1) technical,

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[4] As evidence for the thesis that it is the expectation of an information age, and not the thesis of postmodernism, which does in fact guide military thought, one can adduce this example of a statistical sampling. A search for key terms which was run on the Internet pages of the U.S. military and military-related institutions came up with the following results, for "Information Age" and "Postmodern". The journal "Parameters" issued by the U.S. Army War College (<http://carlisle-www.army.mil/usawc/Parameters/>) gave 72 and 28 hits resp.; the webpage of the Strategic Studies Institute (<www.strategicstudiesinstitute.army.mil/>) gave 207 and 10 hits resp.; and that of the Rand-Corporation (<www.rand.org/>) 200 and 28 hits respectively. While these webpages mainly refer to publications of strategic advisors, planners and think-tank experts, on the website of the U.S. Army (<www.army.mil>) one finds a great variety of different articles – from official guidelines, to troop reports, to military news. Here there was a hit count of 9,520 and 17 resp. (data gathered on 20.12.2005).

(4.2) skill-related, (4.3) ethical-normative and (4.4) that of disciplinary space. Unlike in the case we mentioned of a typological attribution, here by applying the concepts of expectation, programme and project, emphasis will be placed on the dynamic and mobilising character of the transformation.

2 Expectations: the Military in the Information Age

One can say that it is now freely accepted in (technology-related) sociology, that expectations about possible future technologies direct and guide the actions of social actors, that arrangements are made for certain future developments.[5] The descriptions of the society-structuring factor of expectations for future technology, are strongly coloured by this idea of "prospective structure" (Lente/Rip 1998). "Expectations allocate roles for selves, others and (future) artefacts. When these roles are adopted, a new social order emerges on the basis of collective projections of the future." (ibid 203) The idea that expectations about technical developments are particularly liable to actually becoming a deciding force of structuration, is supported by the fact that the talk of an inevitable technological progress can be considered as a central "ideograph" for the modern era, and conversely, technical progress can be viewed as the classic feature of modernity (Lente 2000). Since the progress in what is technologically feasible appears to be an evident fact, the step from the prediction of a development – often coming across as tantamount to a promise – to the necessity of it happening, is readily made (ibid). The predictions of

a future technology generally press for action. It is precisely these two factors, a strong and effective will to fashion structures, and a great keenness to describe future expectations as necessary requirements, which one can observe in the present transformations of the military. One can track the way the idea of the "Information Age" inspires the successive unfolding of socio-technical structures, on three levels of social aggregation: it presents general guidelines of armament technology, it defines the frame of military organisational alignment, and also the frame for the restructuring of the soldier. Now we will deal first with the general guidelines of strategic armament.

The concept of the information age is linked to a set of expectations which are concerned primarily with the macro-societal level, predicting a far-reaching change in all fields of society. The main reference for the military experts, the "forethinkers", is the work of futurologist Alvin Toffler. "Third wave" is the metaphor used by Toffler (1980) to describe a third wave of epochal change, which is to bring a change in civilisation comparable to that caused by the transition to the agrarian economy, and to the industrial revolution. Toffler's diagnosis is translated in the military field as a diagnosis identifying a "Revolution in Military Affairs", a conceptional standard which has already been given an acronym: RMA (cf. Hundley 1999; Sloan 2002; Cohen 2004). This reference to an epochal transition, the mention of a revolution, is used to support the radicalness of the change demanded in the military field, its urgency and its wide scope. Mobilise and get ready for a constant change, so runs the military programme. "In today's world, change has become the norm, not the exception", this is how Frank Fernandez, director of DARPA (Defense Advanced Research Projects Agency), describes the state of affairs (quoted from *Der Derian* 2001: 102). The rhetoric of looking to the future, of

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[5] For the role played by future expectations about the development of specific technologies, in ideals, metaphors, science fiction, political agendas, cf. Dierkes/Hoffmann/Marz 1992; Mambrey/Pateau/Tepper 1995; Brown/Rappert/Webster 2000; Konrad 2004; Uerz 2004.

radical and permanent change, becomes ubiquitous when one speaks of RMA. In 1994 the army refers to it as "new force", "new century", a "new way of thinking" and "Force XXI". Later on one finds such concepts as "Army after next" and "Future army", presented as guidelines for a change of organisation. And in 1996 the future-oriented programme *Joint Vision 2010* is issued, addressing all the armed forces; followed four years later by *Joint Vision 2020* (cf. CJCS 1996, 2000).

The talk of RMA suggests some far-reaching technocratic visions. Regarding armament technology, it lays stress on the dynamics of technical development, especially information and communications technology, which is said to do away with the existing base of military power. No longer does military strike-power result primarily from the potency of weapons, but rather from a superior co-ordination of information and communications technology. The expectation transits seamlessly into requirement: "The future is, as Toffler says, that unless you tame technology, we will encounter future shock. We're not only taming technology, we are turning technology into not future shock, but future security." (defence minister William Cohen 1997, quoted from *Der Derian* 2001: 113) The RMA caused by information technology is going to come anyway, so the logic goes, one just has to keep abreast of it, at the forefront of it. It is certainly clear that efforts in the field of armament are concentrating on information technologies under the head of "digitization". Two technocratic visions are linked to this: that of the "transparent battlespace", and that of the "precision strike" (cf. Sloan 2002: 4-9). Surveillance using satellites, planes and low-flying unmanned aircraft will – so the prediction goes – make all that can be visible, visible, using radar as well as thermal and optical imaging. And parallel to this, in the field of Command and Control, there will be sufficient executive power

to fight everything that can be observed. Warfare in the "Information Age" means that one no longer tries to gain military strength by individual, superior weapons systems, but rather by using information and communications technology to network them, by "intelligent munitions" and new surveillance technologies. Certainly such visions are an advantage in the struggle for budgets and funding: information technologies hold out the promise of delivering more performance at less expenditure (Adams 1998: 93-101, 122-137; Sloan 2002: 46-48).[6]

In this way the military use of the term Information Age draws on a basic principle of the sociological thesis of an information society: "By information society one evidently means a recommendation and a program of

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[6] At this point it would be appropriate to add a note about the current state of the literature. Most of the publications on the subject of this military transformation originate from the military sector itself, and the military sociological research, too, is almost everywhere (this applies especially to the USA) institutionally and financially tied to military organisations, and accordingly application-oriented (cf. Caforio/ Nuciari 2003). Hence we find that mixtures of diagnosis and advice are the rule. The present study is based on a comprehensive analysis of materials about RMA, especially the numerous publications of the "think tanks" such as the RAND-Corporation or the Command and Control Research Programme; further, the leading journals in the field of military studies have been systematically evaluated, and here as a primary reference one can name *Parameters*, the Quarterly of the US Army War College. Regarding the change in training, the published studies of the U.S. Army Research Institute for the Behavioral and Social Sciences have provided a detailed insight into the transformatory processes, while a description of their broader outlines can also be found in the texts of military sociology. The present article is based to a large extent on a kind of reading "against the grain" of the central programmatic writings, i.e. advisory texts and instructions as well as the findings of military sociology literature. Such an approach in this context was only used by the quoted writings of Der Derian (2001) and Dillon (2002).

action which one wants to impose upon a government." (Stichweh 1998: 438) It is our perception that this thread occurs throughout the entire sociological works: from the one performed on behalf of the Japanese government which introduced the term into the political debate towards the end of the 1960's, up to the now well-known study by Simon Nora and Alain Minc which was ordered by the French government in the year 1980, and finally up to Al Gore's programme of information-superhighways (cf. ibid: 434-439; Konrad 2004: 41-49). The military prognosis participates in widespread visions of how controllable and manageable technical and social progress will be, and takes up the idea of a transition from industrial warfare to war in the information age, translating it into the technocratic vision of a transition from *mass destruction to precision warfare* (cf. Adams, 1998: 292-304; *Der Derian* 2001: xv-vxii). The expectations bound up with the information age first structure the military apparatus in two ways: they prescribe the focus for armament technology, and they exert an extremely mobilising effect by setting the mood for extensive processes of change.

3   Programme of Action: the Network as Prospective Structure

Finally, the idea of a network-centric warfare leads from a general mobilisation to the actual, concrete programme of transformation. The concept was introduced into the debate on RMA by vice-admiral Arthur K. Cebrowski with his co-author John J. Garstka, in 1998, and rose to become the programmatic guideline for the restructuring of the American armed forces. As the "father of network-centric warfare" (DoD 2001), Cebrowski was eventually appointed director of the Office of Force Transformation, which was formed in November 2001 with the task of co-ordinating and promoting the structural change of the armed forces.

The entire programme of network-centric warfare aims at a comprehensive transformation: "Initiating a whole-scale re-thinking of the very basis of military organization, doctrine, force requirements, procurement policies, training and operational concepts." (Dillon 2002: 73) The idea derives its effective energy and plausibility from a variety of heterogeneous sources. The factors and procedures of structuring the organisation, are geared to the new organisational rationality governing enterprises in the economic field, as we have indicated earlier. And the idea gains further plausibility from the reference to the type of organisation of the new opponents, who are after all themselves, too, operating in the networked rather than the hierarchical style (Arquilla/Ronfeldt 2001). Furthermore, it draws its powers of persuasion from considerations of complexity theory, which draw parallels between natural events as interpreted by chaos theory and the nature of warfare, and explaining the societal concept of self-organisation as a strategy for managing complexity (Alberts/Czerwinski 1997; Czerwinski 1998). Finally – and this is the point which is to be outlined in what follows – the concept of network-centric warfare draws its rationale from the translation of cultural forms which have emerged from the development of the Internet, into the setting of warfare.

The immediate reasoning, however, is that networking is considered to be the key to an increase in military strike-power. The director of the Command and Control Research Program David Alberts and his co-authors put it like this: "We define NCW as an information-superiority-enabled concept of operations that generates increased combat power by networking sensors, decision makers, and shooters to achieve shared awareness, increased speed of command, higher tempo of operations, greater lethality, increased survivability, and a degree of self-

synchronization." (1999: 2) In harmony with this idea, as one of the central initiatives in this transformation, the U.S. Defense Department has been working on setting up a Global Information Grid (GIG) (Libicki 2000). The GIG is considered to be an "Internet-like network for D[epartment]O[f]D[efense]-related operations" (GAO 2004: 3), a military Internet in which everything is connected, the entire command and control systems, all the weapons platforms, all the soldiers down to the individual footsoldier, together with other services, from weather to the secret service. A projected date for the basic installation is 2020, and 21 mill. $ have been set

work-centric" design, and operated in a way akin to the Internet. And this is a trend which is diametrically opposed to the present military communications methods. Martin Libicki (1999: 23) presents these ideas graphically in the following sketch (Fig. 1).

No longer are we to have the scenario where the individual battle groups have access to specific means of surveillance, and the gathered information is then made mutually available to each of them. This is how the conventional form of military information management is set up. The new method now is to have the sensor data entered into a common network, and
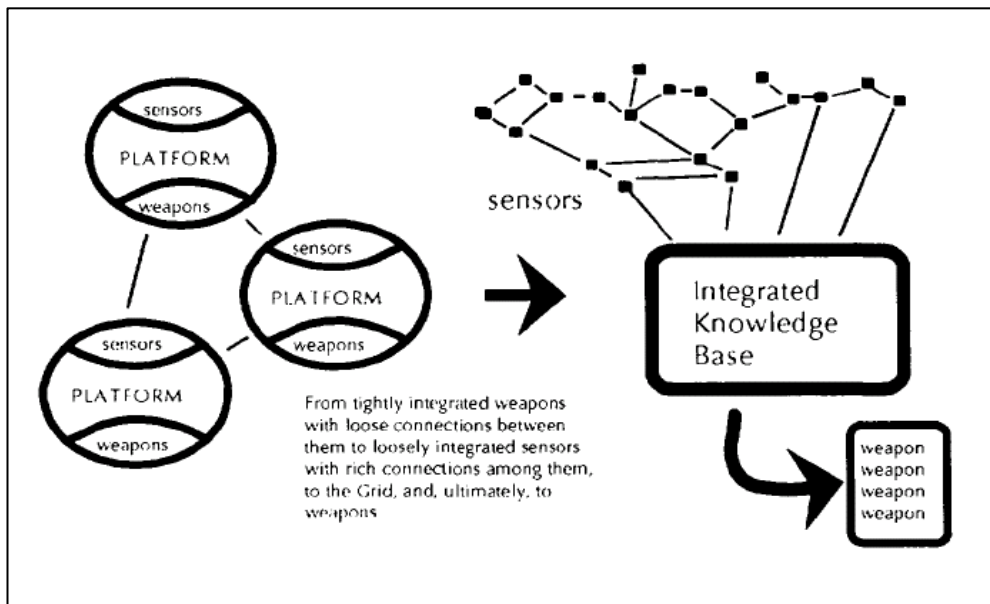
aside for the period to 2010 alone.

This military Internet is the technical means to implement the new organisational structures, procedures and social behavioural forms – or to put it more precisely: the means to initiate the "coevolution of organization, doctrine, and technology in the warfighting ecosystem" (Alberts/Garstka/ Stein 1999: 3). The Internet, or an Internet-type design of information management, is conceived as the catalyst for a completely new structuring of social roles, an entirely new organisational culture. On the basis of the GIG, information management is to be shifted from a "platform-centric" to a "net-

then distributed and made retrievable via this network, in collated, processed, stored and administered form. The "networking of sensors, decision-makers and shooters" thus means doing away with the exclusive power of certain specific platforms to hold specific pieces of information. The flow of information is to be decoupled from the traditional functional and hierarchical differentiation. Hierarchies, monopolies, the asymmetrical control of information, are brought into a kind of marketplace allocation. The information flow is decoupled from the hierarchy of command. The powers of information management are shifted

from the sender to the user. No longer do those who provide the information decide to whom it is to be given, for whom it might be of use. They simply enter it into the network. Potential users decide what they want to do with it (Libicki 1999: 71-93; Alberts/Garstka/Stein 2000: 65-68; Albert/Hayes 2003: 74-82). This is exactly what is meant by "shared awareness": the distribution of information takes place not through "stovepipe monopolies" but via the GIG, which consists of "eclectic, adaptable marketplaces" (Alberts/Hayes 2003: 218).

Even more far-reaching is the proposal to radically change the function of command. One heuristic approach to successful philosophies of command, from the 20th century, lays out a series of six steps: passing from a manner of proceeding which is regulated in a detailed fashion and centrally controlled, to operational forms which are decentrally controlled by general rules and intentions only (Alberts/Hayes 2003: 18-26). Equipped with network technology, one might expect that one could potentially operate using all types of procedure. But, say the protagonists of network-centric warfare, the optimum in "speed of command" und "tempo of operations" can only be attained using the latter type of procedure which we have just mentioned: "Self-synchronization is perhaps the ultimate in achieving increased tempo and responsiveness." (Alberts/Garstka/Stein 1999: 175) Self-synchronisation means short-circuiting the feedback-loops of observation, orientation, decision, action, which are spread out over various functioning units, and hence also the traditional chain of command itself: even before a command is issued, the subordinate instance has grasped the situation and anticipated the change needed (cf. Wesenstein/Belenky/Balkin 2005: 95-97). The central entity to which the actors orient themselves is no longer the command, but the picture of the overall situation, which is circulating in the network.

Military publications have drawn a lot from thinkers of the "cyberpunk culture" described in Wired Magazine (cf. *Der Derian* 2001: 17-18). Here again it is not the technocratic vision of central control, central management, which is given priority, not the technical engineering metaphor of the network. Rather it is biological evolution and self-organisation which are seen to enable the management of unpredicted events by a co-ordination of scattered knowledge, by organisation using bottom-up processes (cf. Wyatt 2000: 118-120). The tendency is for the network to overlay the chain of command: "Unlocking the full power of the network also involves our ability to affect the nature of the decisions that are inherently made by the network, or made collectively, rather than being made by an individual entity." (Alberts/Garstka/Stein 1999: 105). Collectivist principles are no longer opposed; they are incorporated as a productive force. The collective takes centre-stage, the power of position is replaced by the effective powers of relatedness. Functions are no longer hoarded at command posts, now the motto is rather "Power to the Edge". (Alberts/Hayes 2003: 180-181)

Following on from the focus on network structures, other factors of expectation of the information society come into play, beside those with the stress on the potential for technocratic regulation and control. When the protagonists of network-centric warfare refer to an information society, they are evidently inspired by media theory and inter-cultural flow, for example when they refer in an appreciative way to the forms of a "distributed social order" (Faßler 2001), and this with a view to reconstituting the military itself as just such a network organisation.

4 Land Warrior: The Soldier as Socio-Technological Project

The new rationality of organisation, and the new organisational culture which is emerging along with it, call for a redesigning of the soldiers themselves. Within the compass of network-based military operations, new models of leadership are developed, and the infantryman, the simple dismounted soldier, is also thought of in a new way. The defining character of what goes to make up a soldier is in a process of change.

This change can be described schematically as having four aspects, with reference to a general analysis of forms of government, meaning the forms of governance and self-formation (cf. Foucault 1986: 37-39; Dean 1999: 20-39).

Firstly, forms of governance always work with specific techniques, with a certain kind of expertise and know-how, together with procedures, instruments and strategies, to shape specific subjects. From this standpoint, the predominant feature which characterises the dismounted soldier is that he is conceived as a socio-technical venture at the height of the information age. Here the techniques of subject-formation lead to a technical hard core.

Secondly, the techniques of governing are always informed by a specific knowledge, a specific rationality. They refer back to an underlying thought-structure, which determines what can be taken as realisable, what can actually be done. For the new soldier, it is the appeal to the network idea itself which is the basis for determining what the soldier has to learn, in what direction, by what methods he should be shaped, by what skills he should be distinguished.

Thirdly, the techniques of administration present a set of duties, of rules, of expectations, by means of which the subjects are bound and defined. Sub-jectivity is based on an ethical dimension, it is not conceivable without some ethical foundation. And in the context of the network-based reconfiguration of the soldier the question presents itself with fresh urgency, as to what should be the professional culture, the soldierly ethos, the thing which marks the soldier apart from all other subjects.

Fourthly, every form of administration contains a *telos* or aim, which means it at once brings into play a kind of utopia or utopian ideal. Governing is based on programmatic formulations and ideas which work on the assumption that subjects can be fashioned in the desired manner. And yet at the same time, every programmatic approach draws its energy from the fact that programme and reality do not match up completely. We will now take a closer look at this *telos* of governance, which presents a kind of utopian ideal, in order to show the special form of disciplinary space which is set up in operations following the network paradigm.

4.1 The Soldier as Information-Technology Venture

During a conference organised for the Pentagon by the Oak Ridge National Laboratory in 2001, the purpose of which was to formulate proposals for the visions and plans outlining the development of the soldier of the future, General Paul Gorman of the *Institute for Defense Analysis and Science Board* described the general situation of the infantryman as follows:

"The soldier of today is thrust far forward. He is the point of the Army spear. It is very lethal and very lonely out there. The soldier of tomorrow will never be alone and he will advance on his enemy shielded by dominant information. His leaders will be able to say this to him: 'Soldier, you are the master of your battlespace. You will shape the fight. The network will enable you to see all that can be seen. You will out-think, out-maneuver and

out-shoot your enemy. The Force is with you. You are one with the Force.'" (NSD 2001, Composite Vision: 2)

The mobilisation of the future, the playing off of the present against a predicted technical development to come, characterises the forming of the soldier. Gorman's diagnosis of the present situation hints at the fact that the dismounted soldier was a neglected figure in the military thought of the Cold War. There was no place reserved for him on the highly modernised battlefield, an area possibly even contaminated by tactical atomic weaponry. The only form one could still imagine the infantry taking was in the guise of robots. And it was only the new threat scenarios which brought the infantry back into view. Generally the miscarried operation in Somalia of 1993 – which as "Black Hawk Down" has already been turned into a notorious media event – has been styled as the starting-point for considering a complete overhauling of the infantry (Adams 1998: 60-80, 108-111).

The ultimate soldier of whom Gorman speaks was first presented as the "Land-Warrior" in 1994. The "Land-Warrior" was going to be an integration of the dismounted soldier into the information network covering the entire field of battle, by means of wearable computer, permanent radio contact, global positioning system, headgear with integrated speaker, microphone and optical display, laser rangefinders, day/night cameras and other technical devices. The overall idea of network-centric warfare is based on the feasibility of technically linking up the infantryman to the tactical situation picture, to keep him permanently online. The infantryman should not merely be fitted out with new pieces of equipment. Rather he is projected as an integral unity of man and machine (Sterk 1997: 69; Schaprian/Rather 1997).

Land Warrior is a project in which three general expectations for the re-

search into wearable computers are spelled out in military terms (Baumeler 2005: 10-15). Firstly, what the traditional soldier could learn of just by a kind of vague sensing, will be achieved by automated *context sensitivity*: sensors integrated into the uniform and distributed at other locations are to recognise surroundings which are contaminated chemically, atomically or biologically, and trigger automatic warnings. And also the vague sensing of the opponent, and his concealed or nocturnal movements, is to be replaced by an exact technical viewing, such as by thermal-imaging devices. In addition to all this, the network provides the soldier with an *augmented reality*. From getting help with a foreign language, to the map showing the location of friend and foe, he is to be provided with every possible kind of supplementary information. He can veritably immerse himself in this augmented reality, where information is shown to him via a see-through display, imaged directly into the optical field, for example in the form of distance lines, prohibited areas, or targets. (NSD 2001, composite vision: 20; Wehrtechnischer Report 2003: 31-35). Finally, the Land Warrior is to be given the capacity for *autonomous and proactive action*. The system should for example automatically recognise the soldiers' positions and send out corresponding reports. Bodily functions (pulse, temperature) are to be automatically monitored and any irregularities reported. Nano-technologies, which are planned for the successor of the Land Warrior – the Objective Force Warrior, – are to open up even more far-reaching possibilities: textiles which actively regulate the microclimate, and which register any loss of blood and then automatically tighten, and which can recognise the surroundings and adapt to them like a chameleon (Erwin 2003; Rötzer 2003; Shachtman 2004).

Here, the technique of shaping the soldier consists in using this method

of fitting of new technologies directly onto the body of the infantryman, to constantly push the duality of technical and social into more areas of action. The soldier becomes a hybrid actor, whose technical components are increasingly modified to take on qualities which are considered to be specifically human – such as behaviour which is specific to a situation and the ability to learn during "proactive acting" (cf. Rammert/Schulz-Schaeffer 2002). For example the visual perception of the soldier's surroundings, or his own bodily condition, changes from an exclusively social action to an action that is both human and mechanical; and the two can then be recombined in a modular way. In this manner the network-centric logic, of decoupling sensors, decision-makers and shooters, is transferred to the microlevel of the action of the individual soldier. Thus for example during the act of shooting, a kind of transference of media takes place in the unity of eye, firing sight, target-location and firing. Targets can be marked by having data sent in from the network. In this way it is possible for soldiers to take aim at a target which they merely see in virtual form. This also makes new shooting techniques possible: by using a video-sight, the eye can be lifted from the sight, the rifle moved out from cover and held above the head or pointed round a corner. The image from the video-sight is transferred to the head-mounted display, and so the target can be aimed at in this way. Supported by the network, new forms of combat interaction also become possible. Thus a soldier can request laser or GPS guided fire, by marking an objective with his laser. The soldier becomes the sensor for a shooter who does not have the target in his field of view (cf. NSD 2001, Panel 2: 4). The expected gain in flexibility, speed and coordination which this combination of man and machine offers, is immediately apparent.

The characteristic feature here is the projective, future-oriented nature of the scenario. The equipment appears to offer endless possibilities. And thus new projects are constantly invented. Even though the Land Warrior has not yet come into production, work is already being done on his successor.[7] With the technological shaping of the soldier a utopian telos of governance has already been brought into play: the human being as infinitely adaptable Cyborg. Such a vision is derived from the field of space travel in the early 60's and the associated literary genre. According to the predictions, the human being will be able to survive in surroundings hostile to life, thanks to scientific progress (Spreen 1998: 7-12). Essentially Land Warrior is working on a technical heightening of the sensing-power of the soldiers. In the case of Future Force Warrior, the protective suit is itself to become "intelligent" as well, to recognise the surroundings, and assist the movement of the soldiers by "exoskeletal strength". What once applied to outer space, now gets transcribed to become a military programme in battlespace: the "subject"

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[7] Equipped with a budget of 6 billion dollars, the original plan was to have about 10,000 such systems ready for deployment by the year 2000. However, today there is still no production-ready version 1.0 of the "Land Warrior". The planned introduction met with repeated delays because of technical problems. A report by the Government Accountability Office (GAO 2005: 91-92) states that in January 2005 the personal network area system, which contains the switches, wiring and interfaces which are meant to connect up the elements worn on the body, was still not ready. And also the software-based Joint Tactical Radio System, which was to ensure that all the radio equipment used in the tactical area would be compatible, was still at the development stage. A further problem was the enormous weight of the total kit, which depending on the kind of full set of equipment ranged from 86 to 100 pounds (Wehrtechnischer Report 2003: 31-38).

becomes the technological "project" (Flusser 1994).

4.2 Professional Skills: the Idea of the Multi-Skilled Warrior

In this new configuration, bottom-up processes and self-organisation become the central factor in military operations, especially at the tactical level; the Internet design of knowledge and information structuring, is thus transferred to the military organisational structure, inspired by media techniques. This is perceived as the only way to be in a position to deal with the dynamics and complexity of the new military tasks. But more than just equipping each soldier with new technical skills – "digital skills" being the appropriate term here (Schaab/ Dressel/Moses 2004; Baxter 2004) – they are to be given a broader set of overall capacities and competencies.

In harmony with this idea, the *Army Research Institute for the Behavioral and Social Sciences* (ARI) is working systematically to determine precise profiles of the new requirements, and is carefully examining the models for new forms of training. As a first stage, a research programme of the ARI is investigating how the new set of geo-strategic tasks and the push for more technology affects the conditions of the soldiers' training and service. It has identified six basic changes (HRRO 2005: 2-4). The organisation is to be understood as a "learning environment" and no longer as an organisation with stable descriptions of official posts. It exhibits a "transformed Army culture", because "every soldier is trained and equipped to be a decision-maker". It is characterised by new communications methods, involving an enormous frequency of communications. These three points are now added at the top of the list of military criteria and requirements, and only afterwards do we find listed the old factors, such as action under stress and in situations of endangerment to life, as characteristic features of mili-

tary operations. Thus, the research institute suggests, right at the recruiting stage other "KSA's" (Knowledge, Skills, and Attributes) have to be tested and promoted: the ability to adapt, the ability to communicate, and even cultural tolerance, these are given priority now. The training objectives here define a new type of soldier – this in turn attracts a different type of recruit, one who is far more educated, for the military. "Intelligence" is prescribed as the main precondition.

The essential purpose of the training, as proposed by the ARI, is found in the concept of the "Multi-Skilled Soldier", an aim which is clearly set apart as different from traditional training methods (Nelsen/Akman 2002). Traditionally there have been very clearly demarcated and separate descriptions of the individual occupations: this is termed Military Occupational Speciality (MOS). There is a very precise ruling about which skills a person fitting a particular MOS must have. The purpose of this system, which was introduced at the start of the 20th century in the sense of Taylorist job descriptions, is to enable a ready access to replacements. Should, say, a soldier of a mortar platoon, with job code MOS 11C20, be effectively put out of action, then he is simply replaced by another MOS 11C20. Naturally in this system it would still be possible for the soldier to gain further qualifications. But what has changed now is that in every training programme from the start, other wide-ranging skills from other departments are to be integrated. Both teamwork and independence are to be strengthened. The job boundaries are now seen as flexible, the jobs themselves in the midst of a flux. As a consequence of this, continued training is now the duty of every soldier. What is more, a quality which was previously considered suspect for all but the command levels, is now to be a standard requirement for every soldier: the creative problem-solving ability: "The focus of the training would be to instill

in the soldier the mindset of adaptability, self-education, and problem solving as defining attributes." (ibid: 6)

Adaptability, self-education, problem solving are viewed as necessary skills for every soldier at the crest of military missions in the information age: "In one moment in time, our service members will be feeding and clothing displaced refugees – providing humanitarian assistance. In the next moment, they will be holding two warring tribes apart – conducting peacekeeping operations. Finally, they will be fighting a highly lethal mid-intensity battle. All on the same day, all within three blocks. It will be what we call the three block war." (Gen. Charles Krulak, cited in Alberts/Hayes 2003: 66) Krulak's oft-quoted idea of the "Three Block War" reflects the new situation in political security, the new perception of threat, here viewed from the perspective of tactical missions. The broadening of what one considers to be the military field of deployment becomes the basis for making new demands on the soldiers' abilities and performance. It is the ready canvas, on which the image of the soldiers' qualities and skills is drawn. The situation may call for an instant transition from negotiating good relations between national groups, to fighting the enemy. It affects both the inner attitude, and also the skills needed in, say, switching a display from foreign language assistance to enemy situation picture. In such situations, the command and obedience structures ingrained by practice, the specialisations and mechanical routines – the kind of discipline which Max Weber had in mind when he spoke of the "iron cage of obedience" – can no longer suffice to ensure an adequate service. The soldier has to adapt himself to a regime of fluid transformation and change: "The multifunctional warrior is now trained to think not what to think. At one time, the warrior was trained only for certain missions. We are now breaking down this linear environ-

ment. Task organization is becoming increasingly fluid." (NSD, 2001, panel 1: 7)

This fluid, transformatory regime, which the sociological diagnosis identifies as the central characteristic of the information age (cf. Castells 1996, Lash 2002), is now dictating the military plan of operations – it guides the profiling of the new soldier. While before the emphasis was laid on obedience, one now speaks of "empowerment". Network-centric warfare "involves the empowerment of individuals at the edge of an organization" (Alberts/Hayes 2003: 5). And Land Warrior is considered to be one of the decisive instruments for flattening the hierarchy and shifting the power of the organisation downwards (Adams 2000: 55). The spirit of a general is to be planted in every private. Thus Krulak (1999) could describe the new key figure emerging from this fluid regime, as the "strategic corporal".

4.3 Professional Culture: the Ethos of the "Land Warrior"

The protagonists of network-centric warfare orient themselves to the communal visions of Internet culture, they relate network culture to a culture of the collectivity. As a result, the key problem which every social network organisation has to face now becomes crucial: if self-organisation tends to replace the hierarchy, then trust becomes the central resource for co-operation (cf. Weyer 2000: 11-14). The *Joint Vision 2020* speaks of a spirit of "jointness", which is to hold the armed forces together, from the small group up to the highest levels transcending the separate armed forces, from soldier to leader. The theorists of *network-centric warfare* go on to assert that "interoperability" also holds sway in a "cognitive" and "social domain" (Alberts/Hayes 2003: 107-114); that means it would be based on deep emotional and normative ties. *Network-centric warfare* calls for a search for stronger forms of cohesion. And

here the answer to the problem of building trust can indeed be found in the traditional military way of strengthening self-definition: the common ethos of the soldier. Not only should the qualities and skills of the soldier be developed, it is the ethical shaping of the soldier which becomes a central project of a future-oriented transformation process.

Considering effective ways to collect together all the "efforts on winning the Global War on Terrorism", the U.S. Army (2004: 15) named 16 concrete initiatives which were to be given priority. One of them was: "The soldier – develop flexible, adaptive and competent soldiers with a warrior ethos." Such a warrior ethos has been developed by a task force specially set up for this in the army's programme of transformation. The result is tantamount to a confession of faith: "A warrior's ethos. I am an American soldier. I will always place the mission first. I will never accept defeat. I will never quit. I will never leave a fallen comrade. I am an American Soldier. I live by this creed."[8] This ethos, which is firmly integrated at every step of training, is aimed not only at guiding the soldier's behaviour, it is intended primarily to promote a collective identity. To the question "What do you do for a living?", the soldier should no longer reply: radio-operator, cook or electrical engineer in the army, or suchlike, but: "I'm a warrior" (Burlas 2004). Besides this initiative, a plethora of discussions and programmes have arisen as to how this spirit of jointness is to be developed. Suggestions such as these emerge: to survey the "command climate", in order to assess the ability of officers to create trust (Jones 2003); to base the promotion system more firmly on the organisational unity rather than on individual careers (Smith/Corbin/Hellman 2001: 106-110);

to experiment with an extension and prolonging of the basic training in order to strengthen the collective identity (Nelson/Akman 2002: 12).

This leads conceptually to a twofold contradiction in the constitution of the "postmodern" military, as the military sociologists have observed, which is bound to emerge in network-centric warfare. The first point is the contradiction between the attributes of a "warrior" and a "peacemaker", which for example finds expression in the dichotomy of "to be fit for action" vs. "empathy", of "decisiveness" vs. "expertise", of "obedience" vs. "co-operativeness" (Nuciari 2003: 75). And secondly, the contradiction between an organisation which, oriented to social and yet no less to technological qualification profiles, compares and equates the professional image of the soldier to that of other commercial activities, and yet attempts to distinguish an ethos specific to the profession, the state of being a soldier, from all other activities (ibid: 76-80). Both are to be strengthened at the same time: the warrior and the peacemaker, the obedient soldier and the independently responsible expert. Network-centric warfare makes of contradictory demands a feature of its programme. The new soldier is meant to be both peacemaker and warrior, he is to be capable of acting in an independently responsible, creative and adaptable way, while yet remaining ever obedient to orders, subject to the military collectivity and duty-bound to service of the nation.

When we look at the way these contradictions come into play, we find that there is an aligning of the network-centric military organisation to match the new opponents of the information age undermining the sovereignty of the modern state – from subversive political networks, up to new forms of organized crime and terrorists groups. For these too – according to the analysis of Arquilla/Ronfeldt (2001: 328-343) – replace organisational rigidity by a

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[8] This "Soldier's Creed" in the concise version cited here can also be found as a videoclip (www.army.mil/warriorethos/).

greatly increased density of communications, which is achieved by a methodical use of new information and communications technologies, and by encouraging a communal approach with the use of narrations, values and doctrines. The term network was always associated by the national force-organisation with a kind of terror because networks are by nature organisations at the boundary of formal adhesion, at the edge of dissolution. It is not unusual for combatants to run off when they see things getting too risky. And networks are also seen as a terror because they operate constantly on the verge of transgressing rules. Indeed the network was ever the metaphor for the criminal, the underground, the radical. And it is precisely in this two-fold manner of operating at the edge, that lies the radical nature and ambivalence of this endeavour to break through the bounds of the iron cage in which Weber saw the people of the modern era confined, by the mobilisation of the power of the Land Warrior (cf. Kaufmann 2005: 247-250).

4.4 The Soldier on the Screen: the Network as Control Room

Besides ethos and doctrine, network-centric warfare does of course hold one special medium for securing trust: the military Internet itself, this "Common Operational Picture" (COP). In these techniques of subject-forming, characteristic forms of visibility are set up, one establishes effective control instances for maintaining and using visibility. And in this very control space we find a further utopian aspect of the network-form of governance, expressed here in military terms.[9]

The essential element, around which the whole networked form of operation revolves, is the COP: "Shared bat-

tlespace awareness emerges when all relevant elements of the warfighting ecosystem are provided with access to the COP. This means that battlespace awareness must be viewed as a collective property (a type of collective consciousness)." (Alberts/Garstka/Stein 1999: 135) The network-based military operates with a "collective consciousness", in the form of media-technology. The link-up to the COP widens the perception. The individual infantryman still knows the situation of friend and foe, he has sensor-data available to him, he is in e-mail-contact with soldiers of neighbouring units and can call up assistance for his particular action over the network. But at the same time each individual soldier is given a "data-double". The infantryman will be constantly online, his movements will be registered and fed into the situation picture. He will have this picture presented to his own view on a head-up display, the whole time. Thus the soldier acts as his own observer, watching his actions as they are represented on the screen. The soldiers can become virtual commanders of themselves, because using the screen they are able to relate their own situation to the overall situation – and that means self-synchronisation. And they act always under the observation of the others for whom the same applies. The network becomes a generalised control space. The collective consciousness, which Durkheim has so effectively shown to be widely distributed and deeply anchored in many of the regulations, norms and instances of society, would here be represented by a kind of running media installation.

What the COP would mean here, is not so much a control by monitoring the execution of a plan, rather what happens is that the whole sequence of *command and control* – that means planning, reconnaissance, orientation, decision, command, surveillance – converges in one simultaneous process. The optimum in governance is

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[9] Regarding the social dispersion of network-formed governance, see the outline by Kaufmann (2004). For the comparison to the supervisory technique of 360°-evaluation, which functions in a very similar way to the COP, see Bröckling (2003).

attained if the constant self-adaptation to the changing situation pictures can be kept up. "Leadership" no longer figures as a quality which is allocated to one person or one position, but as an emergent phenomenon that develops out of the situation (Albert/Hayes 2003: 184-186).

This *telos* of governance, where there is a constant optimisation and fine adjustment of one's own forces, does contain utopian factors for its operation.[10] Gorman's saying, "the network will enable you to see all that can be seen", relates to ideas of a "transparent battlefield", and many have imagined a "God's-eye view" circulating in the network. And this is exactly where one finds the technological utopia: God's insight is immediate, whereas soldiers have to rely on media, on data. Again, it is just at this point where the whole apparatus of information and communications technology, from the GIG to the display of the Land Warrior, comes into play, the whole process by which the reality is brought quite literally "information", via media, via the readings which are worked on by "digital skills". To imagine that this whole machinery steps into a kind of pure media-space, because it runs friction-free, is utopian. This idea hides, for example, the dialectic that when one transfers the war almost entirely into another sphere, that of information, this leads to counter-movements.[11] And it hides

the "frictions" – to use this Clause-witzian term – in one's own gear-wheels, which follow on from internal increases in complexity; for example when everyone is able to decide about targets.[12] Viewed in this light, one might conclude that network-centric warfare is a project of the type described by Daniel Defoe at the end of the 17th century: part of a phase of enthusiastic project-building, which takes it original model from the tower of Babel (cf. Klopotek 2004: 218-219). But of course this utopian undercurrent is linked to project-forms in the sense of contemporary management, which works with concrete objectives, with definite time-periods, with evaluations for individual intentions. The phase of enthusiastic project-building is the driving force behind efforts to realise network-centric projects. The expectations for such technological and social developments are relatively impervious to problems, setbacks, and the failure of individual projects, quite simply because they relate to nothing less than the threshold of a new era.

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[10] It is precisely here where its strength lies: for example, although the implementation of Land Warrior has been delayed for years, the project is constantly being revised but never given up. And again the negative events experienced in the Iraq war – for example that strong forces of the Iraqi army were "overlooked" despite a superior surveillance, or that during the fast-moving mobile warfare in the first phase, it was not possible to set up information networks with corresponding swiftness – all this could be brushed aside while focussing on the future development to come. (cf. Scully 2004; Onley 2004; Grant 2005).

[11] One knows for example that NATO, relying on their high-tech reconnaissance in the Kosovo war, dropped some 3,000 pre-

cision bombs. They struck 550 targets: 50 tanks – and 500 decoys (Sloan 2002: 94-95). Camouflage and simulation is only a means of counteraction, and indeed the internal military critics never tire in pointing out the sensitivity of information technologies towards counterattacks (among many others: Mey/Krüger 2005: 32-33, 36).

[12] The army officer Robert Leonhard (2000: 156-157, 224-225) reports that during large-scale experiments with information-based operations, the use of munitions caused "logistical nightmares". Instead of fighting important targets in a focussed way – and thereby sparing munition as planned, – everything that the improved surveillance identified as a potential target was immediately fired at. Hence there is a constant discussion about the problem of "information flooding" on all levels, and linked with this, whether one can raise the standard of training accordingly, specially at the lower level (cf. among many others Mey/Krüger 2005: 34).

5 Conclusion

The military sociology, like the military programmatic theorists themselves, has for some time now been suggesting that a comprehensive transformation of the military field is currently in progress. A discourse analysis of the programmatic itself, such as the one being carried out here, reveals that in its central formulations it is founded on expectations, which have hardly been acknowledged by the military sociological analysis: primarily, the expectation of a radical technical change.

It was possible to take a three-tiered approach in describing this central role of the expectation of a technical change: there is the strategic-technical transformation which is inspired by the key-word "Information Age"; then the technical, organisational and operative transformation by applying the idea of network-centric warfare, which is clearly realized as and decidedly presented as a coevolutive project; while at the level of soldierly discipline the transformation crystallises out as the Land Warrior project.

In order to understand the mobilising force, the dynamics and range which the programmatic is developing on these three levels, we refer to two distinct research viewpoints with the theorems implicit in them. The idea of "prospective structures" gave some impression of the tremendous mobilising energy which the talk of a transition to the information age evokes in the military context. The term is linked to technocratic visions of monitoring and control, and suggests that in future the superior weapons systems will result from the technology of command and control and no longer from superior weapons platforms.

The idea of "prospective structures" draws on the actor-network theory, whose basic assumption is that technical change should always be expressed in sociotechnical terms, and against this background one can discover the

logic linking together the key elements of the planned technical and social change of the military. The programmatic of a network-centric warfare can be read as a kind of applied actor-network theory, where a military Internet becomes the catalyst for a reconfiguration of the entire organisational fabric. And this leads to a new orientation for the organisational structure, the operational procedures, the information management and information culture. Here the network serves as the pivotal idea, guaranteeing the homologous alignment of the technical procedures and social roles, tasks and attitudes. The fact that the idea functions here more as a metaphor than a clearly defined concept, is precisely what lends it such power: it allows heterogeneous factors, those of decentralised, modular, flexible methods of co-ordination in the economic field, to be combined with tactical methods of battle and the communitary approaches of an alternative Internet culture. Interconnectivity and interoperability become key features, applying in equal measure to technical systems, sociotechnical units of action, the units of organisation, and also to individuals. Furthermore the idea of network-centric warfare, in both its technical and its social components, is viewed as providing the answer to the various geostrategic and tactical challenges which the "Information Age" presents.

This is most evident in the sociotechnical reconfiguration of the soldier, as envisaged by Land Warrior. By referring back to Foucault's theory of subjectivation, which is taken up in current governmentality studies, we gained a viewpoint allowing a systematic approach to the change in the shaping of the soldier within this frame of a network-centric warfare. Firstly the soldier, and especially his senses, will be newly constituted as a sociotechnical hybrid. Secondly, it is not only the network of technical and human activities now being built onto

the body which imposes new demands on the capacities and skills of the soldier. It is rather the overall functioning of a flexible and network-based organisation which makes up the rationality of the concept of the "multiskilled warrior", who is primarily designed for adaptability, self-education and problem-solving. Thirdly, the question of how to compensate for the loss of formal cohesion which characterises a network is answered by a strengthening of fundamental ethics. And the method for this involves learning from the new network-organised challengers with an almost mirror-like emulation. Fourthly, and this is the second answer to the loosening of formal cohesion, one feature of the Common Operational Picture is that a new form of control emerges, which no longer follows the old pattern of top-down control – the aim now is rather to secure a constant adaptation to the situation by means of a generalised self-control.

Thus we find that the reference to Foucault's idea, that one should identify the traces of power in the constitution of the subject, gains a double significance. It not only allowed a systematic analysis, at the level of subject-formation, of the perspective offered by actor-network theory, trying to find the conditions, mechanisms and contents of networks where the technical action potential and social action potential become compatible. It also demonstrates in an exemplary way just how much the network coordination form, with its independently acting, independently deciding, flexible subject, is the result of a power-based subjectivisation process. This is not a new discovery, but it does lend itself to a specially meaningful use in this military context.

As we have repeatedly stressed: here the main focus of interest has not been the theoretical or methodological aspects, but an examination of the basic sociotechnical orientation of the programmatic theorists, working to re-

configure the method of warfare, the military apparatus and above all the soldier, as a network-formation. It is well-known, for example from studies of organisation sociology, that there often lies a broad rift between such programmatic and the actual forms of operation and leadership. And not only where the internal structure is concerned: the question also arises whether it is really feasible to deal with terrorist networks and a partisan-type warfare with forces armed in this manner. On this point we merely indicated certain contradictory elements and the general utopian nature of the project.

But one should take the programmatic seriously. It ought to give sociologists pause for thought, when the very institution which, at the beginning of the modern era, had for many social theorists represented the model example of the new organisational and social type, and which is still now most strongly associated with a hierarchical structure, should now be found to be adopting quite a different organisational and disciplinary mode for its fundamental orientation. And not only this: until now it has hardly been considered in sociology how the entire field of national security is undergoing an extensive restructuring under the new head of "networking" (cf. Kaufmann 2006). In view of such considerations, the diagnosis of the "Rise of the Network Society" can be granted further plausibility.

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