THE GLOBAL SECURITY ENVIRONMENT 2030 AND MILITARY MISSIONS

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17.10.2010

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INTRODUCTION: MAPPING THE GLOBAL SECURITY ENVIRONMENT 2030

We have entered an era of profound transformation and turbulence. Alvin Toffler’s forecast in his 1981 book The Third Wave, predicting a technological wave change leading to a deep transformation of the human condition, appears to be coming true. Since the early 1990’s a growing number of authors have described facets of this globalisation: Zygmunt Bauman (society); Christopher Coker, Martin van Creveld (war); Chris Donnelly (nature of conflict); Peter Dickens, Martin Wolf (economics; technology), Ronald Inglehart, Richard Wright (values); Kennichi Ohmae, Robert Cooper (the state); Robert Kaplan, Thérèse Delpech (impact of the rich poor divide); Thomas Friedman (the big picture) to mention but a few.

The depth of the changes underway force us to rethink the notion of security from the bottom up. We can no longer operate within the framework of our preconceived Westphalian security paradigms. Second, the diversity, tempo and potential impact of the challenges obliges us to look as far forward as possible, notwithstanding the difficulties involved in forecasting. This is reinforced by humanity’s increasing physical power, making the consequences of our actions more dramatic. This paper addresses this by examining three things.

- First, the notion of security itself. What do we need to watch! What do we mean by security and what are its constituent parts? What are our ultimate objectives and what do we mean by key concepts such as threat and catastrophe? Finally, and most importantly, we need to factor in rationality. What is it sensible to try to achieve?

- Second, the transformation of our security environment. What does our current security environment look like and in what ways does it differ from Westphalian security of the industrial age? What deep trends can we identify today, and where might they lead us in the next two decades? What are the broad outlines of our security environment in 2030?

- Third, the military consequences. What military missions might the resulting environment call for? What sorts of tasks will the military be called upon to carry out in 2030?

Of course forecasting is uncertain and relying upon it would be foolhardy. The best we can do is attempt to understand where we need to look, identify significant current trends in these areas, and try to extrapolate where they might lead. However we will inevitably miss critical trends and misinterpret their consequences. The best we can achieve is an hazy outline of some potential future challenges. Hopefully it includes the most important, and hopefully it approximates their nature with some degree of accuracy. However Rumsfeld’s warning, that the most severe challenges arise from threats “that we do not know that we do not know about” holds true. Nevertheless, when all this is said, we are better off trying to see ahead than not to do so at all - provided we do not rely on the forecasts too much.

This is also a study in consilient analysis. It is a broad but structured outline of the transforming global security environment. Like all taxonomies, it offers two things: first, an holistic outline of all branches of the broad and multifaceted new security agenda; second, a structured framework into which the multitude of diverse challenges can be placed. It seeks to identify a deeper order underlying superficial randomness.

The structure and analysis are based on several years preliminary reflections, research and discussions. However it is still a pre-study. The dynamics and trends need to be tested against empirical data, and removed, refined or complemented as necessary. This is the next step in this analysis.
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1. FORECASTING

The forecasting method used in this study involves four steps:

- Identify critical sectors: What do we need to watch? What determines our security?
- Identify critical trends: What deep trends affecting the critical sectors can we identify now?
- Estimate outcomes: Where are these critical trends likely to lead by 2030?
- Outline key scenarios: What broad alternative scenarios can their combination give rise to?

Limits

All forecasting has limits. These increase exponentially the further ahead one looks and the broader and more complex the subject is that one is attempting to forecast. At the level of multiple interacting megasystems of complex megasystems the complexity and uncertainty become overwhelming. This is the case when we try to predict global developments out to 2030. This inherent problem is compounded by the increasing tempo of change and intensity of interactions between widely divergent factors. This is making our environment more complex and volatile, making forecasting even more difficult.

In addition to these systemic challenges at least six specific difficulties can be identified:

- Overlooking: Missing critical trends, either current or future.
- Deviation: Identified trends may not evolve in a steady linear manner, but can escalate, fluctuate, flatline or reach tipping points.
- Fusion: Trends may merge to produce unpredictable synergies, generating non-linear paradigm shifts.
- Ricochets: Trends may impact on each other, establishing new trajectories or extinction.
- Shock: External shocks may jolt trends into new trajectories, resulting from either foreseeable factors or unpredictable Black Swans.
- Black Swans: Events (rather than trends) with a significant impact that no one foresaw or were impossible to foresee will emerge. Rumsfeld’s ‘unknown unknowns’.

One example of Deviation are the demographic predictions of the Club of Rome, which seemed so logical and inescapable at the time, but were completely wrong. An example of Overlooking, Fusion and Ricochets is the world wide web, which few foresaw, and whose massive global impact no one imagined. To the extent possible this study attempts to keep these problems in mind, however they are of course inherently impossible to avoid entirely. The best we can do is try to minimise them and retain a healthy dose of scepticism.

Nevertheless must be done

Despite these obvious caveats we must nevertheless make the effort to forecast. Firstly because even if we only gain a blurry picture, it is still better than trying to drive blindly. Second, because it can be done within limits, even if the picture is fuzzy and uncertain. Third, because the effort itself helps sharpen our minds and develop a clearer understanding of our current situation and challenges. Finally, because it is not possible to develop any sort of long-term planning without some assumptions about the future conditions one will be expected to manage. The net conclusion is that we must forecast, but, must also treat our forecasts with a healthy dose of scepticism.

Complements

Finally it is worth noting two important complements to planning-based security strategies that depend on forecasting. The first is agility - being able to dodge threats that you notice at the last moment. The second is resilience - the ability to recover from threats that you did not see and that struck home. As we now enter an increasingly unpredictable security environment both of these will become important complements to planning based security strategies.

All of the above are examined in greater detail in Appendix 1.
2. CRITICAL SECTORS

This section attempts to identify what we need to watch. For that we need to take a closer look at the concept of security itself, and what the core components of security are that we need to worry about. This sort of basic question may seem naïve, but in times of deep change fact it is precisely this sort of first-order philosophical questions that we must raise.

As the industrial age evolved security became increasingly associated with the State. (At least this was so for the world’s most technologically advanced societies in Europe, North America and the anglosphere and Japan, and as they called the shots it was their conception and practice that dominated security politics.) By the mid-industrial age all significant power was embodied in and controlled by the state. The notion that security was the security of the state became self-evident, as was the (quite justified) perception that all serious threats emanated from the other elite states. In this Westphalian security environment the Great Game of the lead states overshadowed all other security concerns, and security policy focussed ever more narrowly on inter-state politics and, in the final decades, on its military-technological aspects. Security was the security of the state, the main threat came from other peer states, foreign and military policy were the two great tools, and their application was security policy.

As we now leave the industrial age our environment is changing so deeply that these ingrained assumptions no longer hold true. First, because the state is no longer the single defining factor of global affairs. Second, because a host of extra-Westphalian challenges, ecological, functional and social, are beginning to pose as serious, if not more serious, threats to our security. Under these conditions we must not only broaden our perception of security but rethink the very roots of our understanding of the nature of security itself.

2.1. What is Security?

The core definition of security used here is functioning vital life systems. This is a deliberately generic definition, applying equally to single-cell micro-organisms and to complex systems such as human societies and the global ecosystem. However it is important as it allows us to approach the concept without preconceived contextual blinkers. It also immediately raises two further questions. What do we mean by ‘functioning’, and what do we mean by ‘vital life systems’?

‘Functioning’

The notion of functioning is here understood as a sustainable dynamic interaction between opposing but complementary forces, both protecting a given system but also allowing it to adapt and engage in its environment and gradually evolve. This requires a dynamic equilibrium between stability, to avoid crashing or exploding, and vitality, to avoid stagnation.

From this perspective traditional notions of ‘security’ as protection alone are insufficient and, at their extreme, dangerous. Focussing only on protection and stability - fears, dangers, shields, caution, surveillance, shelters, etc. - chokes the positive impulses - opportunities, enthusiasm, hopes, creativity and risk-taking - that a system or society needs in equal degree if it is to flourish and evolve. Safety must be balanced with risk. Joseph Brodsky summed this up succinctly in his blunt answer to the question of what happens to a country that kills its poets. “It goes stupid.” Which is of course precisely what happened to the Soviet Union, where excessive control strangled the human creativity and enthusiasm that drives social, economic and scientific development. A second problem is if efforts to increase surveillance and control of established liberal societies generates a public backlash against the authorities, as citizens react against infringements of integrity. A third insidious danger is if parts of society actually buy the arguments and become paranoid and self-stifling. Such ‘risk societies’ (or bureaucracies) can end up strangling not only their vitality but even their happiness from excessive fear. David Ebhard’s fascinating study of Swedish society illustrates this point perfectly. As Chris Donnelly points out, such risk aversion is particularly dangerous in times of very deep change and challenges.

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1 At least as far as the mainstream was concerned. Notable Cold War exceptions in the strategic studies community include Michael Howard’s “The Forgotten Dimensions of Strategy,” in journal, Vol. X, no. x, month year: pp. xxx and Philip Windsor’s “Title.” Book, publ, ed. year: pp. xxx.

Thus the notion of security as protection must be balanced with security as vitality, or even risk. (Banks, insurance companies and other investment businesses exemplify this perfectly, as well as the dangers of getting the balance wrong. They are also the big experts on these waters, even if their navigation on occasion is catastrophically wrong.) Maintaining this equilibrium is a fundamental and largely overlooked task of security policy. With the exception of the ecological and business communities our culture has few intellectual tools to address this challenge. However in China sophisticated thinking on this has been developed over some four thousand years, as part of their emphasis on seeing the world in terms of change, and the complex consequences of change.\textsuperscript{3} The practical relevance of this worldview is underscored by the fact that it is the foundation of Traditional Chinese Medicine. The theoretical foundations of TCM are also one excellent introduction to this way of thought.\textsuperscript{4} One of the deep tasks of security analysis today will be how to integrate these Chinese insights into our security thinking.

‘Vital Life Systems’

Vital life systems are those processes and the conditions they engender that a system or organism needs in order to survive, function and evolve. While their specifics vary from case to case, they all rest on three common foundations. These are the two deep energies of matter and spirit and the energies they give rise to where they interact. They are the foundation of existence and security in its deepest sense, and they cover all the various sub-components on which our security depends. While the two basic dimensions of matter and spirit are intimately entwined, their driving forces are distinct, at least on a practical level.

These three dimensions, and their specific security characteristics, are described in the following section.

2.2. Our Vital Life Systems

The starting point of this forecast is that we need to focus our attention on three broad vital life systems and their synergies. They are the material (ecological) and sentient (social) dimensions and their overlap in what may be called the functional dimension. Their key attributes and security relevance are outlined below.

2.2.1. Ecological Dimension

The first vital life system is essentially matter. At its core it consists of the universe, our planet and its ecological life systems. Here it is referred to as the Ecological Dimension. It is the foundation of all else, and until recently we could take its functioning for granted. Our ecological base was a public good: a spring whose waters were always replenished and always clean. This is no longer the case, and thus we must now increasingly focus our security attention on this dimension.

The drivers of the Ecological Dimension are the ‘laws’ of the hard sciences of physics, chemistry and biology, but at their integrated megalevels. The functioning of this dimension depends on the simultaneous and complete interaction of vast megasystems of complex systems of physical energies. These megasystems cannot be understood or function if one seeks to reduce them to fragmented subcomponents or analyse them from the perspective of simple linear causality. While humanity has developed the capacity to isolate parts of these systems and direct them to our ends (see the Functional Dimension below), the scale, synergies and complexity of these megasystems exceed our ability to comprehend and control.

Nevertheless we depend on this dimension to provide us with three basic services critical for our security. First, on the most basic level, it is the material foundation of our existence and life. Second, it offers a liveable habitat in which we can survive and flourish. Third, it provides raw materials for us to consume and exploit.

\textsuperscript{3} The Chinese yin-yang cosmological worldview goes back to the earliest divinational roots of the Ijing (Book of Changes) around 2,000 BCE, through the subsequent yin-yang and five energies schools to increasingly elaborate daoist and neoconfucian schools of thought.


Security in this dimension thus consists of three conditions: a) a self-sustaining ecosystem evolving gently enough to; b) provide a habitat in which we can flourish, and; c) the raw materials on which we depend. Achieving such conditions could be called our fundamental material security requirement, on which a host of other, basically material, security conditions rest, such as health, material comfort, etc.

To achieve this we need, on the human side of the equation, to achieve three things. First an understanding of the ecosystem itself and our impact upon it. This is the domain of Big Science. Second, respect for the requirements of our ecological base and sufficient humility to temper our appetites and insouciance. This is the domain of philosophy, and perhaps specifically moral philosophy. Third, practical skills and resources allowing us to balance our impact on the ecosystem with its ability to function, or technology and economics. The deep challenge here is proactive: how to establish a sustainable relationship between humanity and the global ecosystem. This involves not only the practical challenges noted above, but also profound moral questions, of which the deepest one may be the extent to which we should continue to give precedence to specific human instincts and well-being over and above the well-being of the ecosystem. The second challenge, given that we are manifestly failing in the proactive effort to harmonise humanity with the global ecosystem, is reactive: how to deal with and adjust to the ecological instabilities that are emerging as this relationship gets ever more unhinged.

2.2.2. Social Dimension

The second vital life system is essentially spirit. It consists of consciousness and all factors motivating the behaviour of sentient beings. It is that which guides all human action and achievements. Here it is referred to as the Social Dimension.

The drivers of this dimension are psychological: the instincts, emotions and intellect that help direct our actions. It is the domain of politics, in its essential meaning as the quest for influence over other sentient beings.

This dimension encompasses three critical security variables. The first and most fundamental is intent. This includes not only what objectives we are seeking to accomplish, but also the deeper question of how rational they are, in the sense of how well they harmonise not only with what is achievable, but with their broader cosmological context. That is to say their impact on the long term symbiosis between humans and their environment. This is ultimately the domain of wisdom, in the sense of being aware of how one’s objectives fit into the greater scheme of things, and of the full consequences of one’s actions. It requires a broad and deep vision that subordinates shallow short-term desires or fears to deep long-term imperatives. However it also requires a degree of power and stability, as it is hard to take the long-term perspective if one is faced with drastic short-term challenges.

The second critical security variable in the Social Dimension is thus political power, or the amount of influence one has and the skill with which it is applied to achieve one’s ends. It is the domain of political force and skill, not only in terms of achieving one’s ends, but in doing so as cost-effectively as possible. That is to say with as little violence and destruction as possible and with as few unwanted consequences as possible. Political power is important, since its use has a significant and often immediate impact - for better or worse.

The third key variable is the overall political context, or the social environment in which the élites with political power operate. That is to say the structural stability and vitality of the social base. This broad socio-political context is important because it shapes the general level of social stress in which politics are pursued. This in turn frames the margin of manoeuvre of the élites, and, on a deeper level, the pressures towards hard zero-sum conflict or soft non-zero sum cooperation. This is the domain of social structural stability, the conditions that shape this and the social stresses it generates to.

From a human perspective, security here at its most basic is freedom from fear of violence (the bottom layer of Maslow’s pyramid), and on a higher level achieving vitality of spirit, or the pursuit of happiness. Achieving and nourishing these two energies is our second fundamental security requirement. The driving force here is the human psyche, ranging from each individual to global society. At higher social levels the key instruments are firstly intent and how rational it is, second politics and how skillfully it can achieve given objectives, and thirdly culture in a very broad sense of the word, as a means for stimulating vitality of the spirit. The proactive challenge here is how to develop harmonious social relations within and between global societies. The second, reactive challenge, is how to manage the myriad social tensions

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5 Cf Johan Galtung’s work on the concept of structural stability.
that emerge when this goes wrong.

We may also distinguish between two fields in which political power is exercised:

- **Peer politics**, or the interplay between the elite power brokers themselves. These horizontal politics between leaders are referred to as ‘High Politics’ in this study. (NB that this does not imply that the participants are necessarily equals. For instance it may just as well as involve relations between a state and a revolutionary movement, or the police and a kidnapper, as between states. The key point is that it takes place between identifiable actors that wield significant power. It is the relationship between the nodes of power, whatever form they take.)

- **Governance**, or the interplay between the élite and its social base. These vertical politics, between leaders and subjects, are referred to as ‘Low Politics’ in this study. It is of course also a dialectic of influence, since even extremely oppressed subjects are the ultimate arbiters of the power of the élite. (cf Hegel: “The Master Slave Relationship.”, Chapter X in Die Phenomenologie des Geistes.) I use the term Low Politics not because it is less important than High Politics, but because it focusses on the social grass roots of structural stability.

To paraphrase Mao, peer politics are the relations between the fish, while governance is the relationship between the fish and the waters they swim in. The distinction is important, since High Politics directs relations between power nodes while Low Politics sets much of the political context. As such Low Politics represents a more subtle political relationship, based on the social contract between the elite and the masses and the legitimacy of the elite. The social contract may be hard (based on fear) or soft (based on satisfaction), but it is always there. As a general rule however there is a direct correlation between the degree of structural stability and how soft the social contract can be. When the critical mass of society is content you need less rules and controls to maintain order. This in turn further reinforces structural stability since it empowers individuals and thus allows science, technology and economic activity to flourish, generating even more living conditions and thus reinforcing structural stability further. There is thus a close relationship between politics as governance and the functional dimension, and vice versa.

The art of governance is thus a fine balance between control - maintaining political order and security - and freedom - empowering individuals through education and opportunity and encouraging their enthusiasm and creativity. It is a delicate equilibrium however, and easily prone to sliding into escalating cycles either way. Thus the greater the satisfaction of society the more one can relax repressive controls thereby unleashing more grass roots vitality which in turn creates greater functional performance which in turn feeds into greater social satisfaction, and so on. This largely describes the history of the ‘West’, or the OECD community, in the last half of the 20th century. With any luck it will also describe the today’s rapid transition economies. Unfortunately however the reverse is also true. Declining satisfaction can lead to greater needs to prevent unrest and so forth in a vicious downward spiral. No state is immune to this, and several layers of global society are today already on a downwards spiral or on the brink. This includes a segment of the OECD community, notably the spoiled western European welfare societies where greater economic hardship may force a shift from four decades of increasing leisure back to harder study and work.

2.2.3. Functional Dimension

The third dimension emerges where spirit and matter overlap, arising from the interplay between the energies of sentient beings and the energies of the material environment. This involves the interaction of the physical laws of the material dimension with the motivations and qualities of the spirit. Here it is referred to as the Functional Dimension, since it largely involves the efforts of sentient beings to exploit the selected parts of the material dimension in order to satisfy their material and psychological needs.

The driver of this dimension is the interaction between spirit and matter, or human intent and the physical world. It is the domain of engineering, in the generic sense of the word, as the effort to manipulate the physical environment towards given ends. The ends are determined in the social dimension, the conditions are determined by the material dimension, but the interaction of intent with matter is carried out in the functional dimension. This dimension is distinct from the Social dimension since it works with the physical ‘laws’ of nature and not with the psychological motivations of sentient beings. Hence the distinction between politics (the quest for influence over sentient beings) and engineering (the quest to manipulate apparently inanimate matter).

The driver of this dimension can be subdivided into three parts.
**Science**, or understanding the causalities of selected parts of the physical world about us. This is the fundamental precondition for successfully manipulating the material dimension. In this case however this manipulation is highly selective and reductionist. It is based on isolating parts of the overwhelmingly complex material megasystems and reducing them to micro-components whose linear causality can be perceived and comprehended. This has given humanity the ability to steer small fragments of the material megasystems. These micromanipulations do not offer control of the megasystems itself, but they may, when they become numerous and powerful enough, seriously impact on the megasystems, as is the case with the impact of human functional power on the global ecosystem today.

**Technology**, or developing the tools that permit us to manipulate our material environment. This is the practical application of scientific understanding in order to multiply our power over our material environment.

**Economics**, or the quest to generate commodities and services that meet our needs. This is of course only partly a function of physical manipulation of the environment, being equally if not more related to reactions of the spirit, ie how the human psychology performs in manufacturing, managing and consuming products.

In the functional dimension the physical laws of the big natural megasystems are deliberately whittled down to levels that are simple enough for humans to comprehend and steer. The difference from the first dimension is that there it is the megasystem as a whole that is the subject, and it can only be comprehended as a whole, and it cannot function in reduced or atomised form. (cf Zhuangzi, drilling holes.) In the functional dimension on the other hand portions of the whole are isolated (reductionism) allowing us to identify relatively simple causalities which we exploit for specific practical ends. The difference from the second dimension is that here we manipulate inanimate matter as opposed to sentient spirit. The distinction is fundamental as any number of historical examples of trying to apply engineering to the political dimension indicates. With some exceptions there appears to be an odd cosmological law that ensures that one cannot apply engineering solutions – ie purely physical methods – to matters of the spirit. It almost never leads to desired results, it is extremely inefficient in the long run and it generally almost always backfires. While we do use physical force against other sentient beings, and often to great effect, it is rarely used as an end in itself, but rather as a means to influence the other will. And even then it is only one half of the lever, as the stick of fear only becomes truly effective when it is reinforced with the carrot of desire.

The critical security variables in this dimension are threefold. They are parallel to the three variables of the Social Dimension, but in this case focussed on the isolated parts of the material world and not on the spirit. The first variable is **sustainability**, or the extent to which functional activity can be reconciled with the needs of the ecosystems on which they rest. This involves maintaining a sustainable functional foundation. Second is **physical power**, or the degree to which one is able to manipulate the material world in a desired direction. Third is, **productivity**, or the extent to which one is able to generate and provide material conditions that satisfy and empower society and its individuals, thus contributing towards the structural stability of society as a whole. (Freedom from want.)

### 2.3. Generic Threats

The above three dimensions are the foundations of human security. They incorporate all the subsequent second order, third order and so forth Vital Life Systems on which we depend on to survive. Ensuring that they function is our deepest security challenge. This can broken down to three core tasks. First supporting our ecological base by tempering our ecological interaction with understanding and respect. Second satisfying the needs of the spirit by providing both the comfort and vitality that it needs, and nourishing harmonious relations between sentient beings. Third, supporting both the ecological and social life systems through scientific understanding, technological tools and economic activity, allowing us to balance between exploiting and damaging our environment. These are our ultimate security objectives. All else derives from them, and the multitude of imminent security problems are all manifestations of this deeper context.

This section outlines the generic threats to the vital life systems, that is to say the sources of current and potential problems for the functioning of the life systems. These are thus the areas and trends we need to focus our attention on when attempting to forecast our future security environment.
2.3.1. Ecological Challenges

The Ecological Dimension contains two sets of generic challenges. The first consists of natural forces beyond human control that can undermine or severely damage our ecological or functional foundations. These include long term cosmological and ecological trends inherent in the megasystems themselves, such as long term climate cycles. They also include the possibility of sudden megadisasters such as a debilitating meteorite collision with the earth or solar storms destroying our communications infrastructure (the current prediction for 2013). Finally they include planetary events beyond our control such as earthquakes and volcanic eruptions. These are events which we can do relatively little to prevent. What we can do however is design our functional base in such a way as to minimise its vulnerability to such disasters and maximise its resilience should they occur.

The second set of generic problems results from the human impact on our ecological base. This can be subdivided into three destructive types of behaviour:

- **Depletion** of non-renewable resources, such as oil, gas, minerals and biodiversity.
- **Degradation** of biotopes providing us with renewable resources, such as air, fresh water, arable land, forests, fish stocks and so forth.
- **Disruption** of regional and global ecosystems, destabilising our natural environment and undermining its long-term sustainability (at least in a form that is comfortable for us and allows us to survive). Here Climate Change is the obvious example, with all of its disruptive consequences for our habitat, such as weather extremes (heat waves and flooding), more frequent and more powerful storms, desertification, rising sea-levels, etc.
- **Finally one might add a fourth D**, as humanity’s growing functional force has given us the capacity to generate major sudden unnatural **Disasters** in all of the above three categories, boosting their impact. Examples include industrial catastrophes such as Chernobyl, a succession of massive oil spills, the Soviet anthrax release and in the future perhaps biogenetic mistakes.

These are problems that we in principle should be able to mitigate, since we are the cause. However in practice it is difficult for four reasons. First, **acknowledgment**. It is also only in the last twenty years that the world’s elite societies (ie with the power to adress the problem) have become aware of the global ecological crisis, and only in the last ten years or so that it has started to impact painfully on these societies. It is also only in the last ten years that the global political elite has acknowledged the severity of the problem and has begun to include it in an already heavy agenda of pressing priorities. Second, **understanding**. It is also only in the last twenty years or so that a critical mass of the scientific community has started to adress the issue, and only in the last ten years or so that a decisive majority of the scientific community reached consensus on the scale of the problem and that human activity was a major cause. And it is only today that we are beginning to gain a first understanding of both the causes and consequences of the global ecological crisis. Third, **momentum**. The large scale human impact on the global ecosystem began during the industrial age and has been growing for some two-hundred years, increasing almost exponentially in the last century. This has allowed the ecological crisis to become deeply rooted and to develop a massive momentum which is difficult to turn or even slow down even if we were to devote all our efforts to doing so. Fourth, **conflict of interest**. Even with a critical mass of political decision-makers acknowledging the severity of the problem, it is not easy to do anything about it due to other conflicting short-term political priorities. Key among these are the need for economic growth and economic stability. While we may (and must) find long-term ways to reconcile these with a sustainable ecosystem, it is difficult to do in the short term. Maintaining jobs and standards of living is difficult enough for politicians in the world’s wealthiest elite societies, but they are existential in countries like China, India and Brazil, where domestic instability could become cataclysmic if economic growth slows down. The sad result is the series of half-effective or failed global summits on the ecological crisis, from Kyoto to Copenhagen.

This in turn generates three deep generic problems in the Ecological Dimension. First, the increasingly long term **unsustainability** of the global ecosystem as a whole, at least in a form which allows humans and the world as we currently know it to thrive. Second, on a more immediate level, the increasing **scarcity** of natural resources, with all the cascading second and third order problems this gives rise to in the social and functional dimensions. Third, also on a more immediate level, the increasing **turbulence** of our habitat, with the same cascading effects on our social and functional life systems.
2.3.2. Social Challenges

The Social Dimension contains two sets of inherent generic challenges. The first is elite incompetence or the inability of the political leadership to govern wisely and efficiently. The focus here is on the decisions that have major consequences, and thus is very much a question of the skill of the political elite, and the quality and character of the elite itself. The second problem is social structural instability. This affects the context in which politics are carried out. It can either generate violent zero-sum conflicts, as when social stresses lead to national chauvinism, or, at the very least, significantly constrain the range of soft non-zero sum options open to the political leadership. As a general rule structural instability generates conditions nourishing or calling for zero-sum politics. Thus violent social anarchy leaves few options other than the authoritarian imposition of order, and material hardship often forces very hard social and ecological decisions, such as families selling their children or burning down rainforests for farmland. Such conditions of course generate vicious downward cycles. In an ideal world one is able to build up the degree of structural stability to the point where increasingly non-zero sum politics can prevail. This however requires a long chain of complementary and, initially, contradictory conditions or achievements. First and foremost a degree of political control which prevents violent anarchy and yet leaves room for individual creativity and enterprise. Second, building on this, empowering individuals and providing conditions in which they can develop technological advances that provide effective tools and a thriving economy that meets the expectations of society as a whole. Third, the consequent increase of social comfort and affluence, leading to the rise of a dominant and satisfied middle class that allows for an increasingly liberal social contract between the leadership and society, reinforcing the vitality of society as a whole and creating ever deeper structural stability.

This is largely the last few centuries history of today’s community of elite OECD societies. This has given rise to a liberal civilisation and an historical ‘Liberal Age’ which reached its - possibly short-lived - pinnacle with the collapse of the Soviet Union. However such benign may not continue for long. First, because they only prevail among a fraction of global society: today some 15% of the world’s population enjoy deep structural stability (basically the OECD states plus a few), with the beginnings of structural stability emerging for 15-20% of the world’s population in the rapid transition economies (some 20% of the population of countries such as China, India, Brazil, etc.). Beneath this however, a massive majority of the world’s population live in conditions of deep structural instability. A second reason the Liberal Age may be nearing its end is that vanguard of the liberal culture is declining. That is to say that the elite OECD community no longer rules the roost, but must - at best - share power with rising new state and non-state actors, which have not yet attained a similar level of structural stability. Alternatively we may be overtaken by new rising powers that do not share our liberal values or options. The third reason is that the ecological and functional stresses on our structural stability are increasing. This will increase the hardships facing all the world’s societies, including the elite, and may create social stresses that undermine the very preconditions for structural stability as a whole.

Unskilled political elites and/or structural instability can give rise to two severe generic problems. One is the pressure towards zero-sum politics. This is harmful partly because it is less efficient and partly because in its extreme it is destructive. Zero sum closed systems tend to be less creative and productive than non-zero sum cooperative systems, and violent conflicts tend to generate more destruction and produce less positive conditions than peaceful cooperation. A second is simply inability to achieve ones objectives, even in a benign environment. Negative symptoms include the actions that cause more damage than gain, the prevalence of short term imperatives over long-term benefits and the growth of social stresses that lead to vicious cycles of increasingly violent structural instability.

2.3.3. Functional Challenges

The Functional Dimension contains three sets of inherent generic challenges. The first is systemic, and is a function of the vulnerability of the functional base. This depends on two factors: dependence on the functional base, and the fragility of the functional base itself. While all societies throughout history have been dependent on a functional base to varying degrees, two conditions appear particularly characteristic in today’s world. First, the immediacy of the post-industrial societies dependency on their functional base. This is both a function of increasing efficiency (eg global just-in-time deliveries) and specialisation (eg the range of vital functions on which urban society depends and over which households have no control whatsoever). Second is the new fragility of the functional system. This is both caused, but also mitigated, by the massively increasing interconnectivity of our functional base. Today’s Functional Dimension is a

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global network of transformative nodes linked by extremely rapid flows. This has two positive effects. It permits us to maximise functional power (scientific, technological and economic) for those who are plugged into this grid, and it offers a degree of redundancy, since flows can be rapidly rerouted and nodes reshuffled if individual subcomponents collapse. However it also presents two severe challenges. First, speed: shocks of all sorts - bad decisions or mistakes, pandemics, sabotage - can now be transmitted extremely rapidly along the network, surpassing our ability to react. Second, complexity: the global functional network has grown into a megasystem of complex systems of systems which surpass our ability to understand and control. While mankind has always faced economic surprises our technological base has never before been so complex, so globally interlocked and so volatile.

The second set of generic problems in the Functional Dimension is human. It consists of the vulnerability of the functional base to deliberate human damage. It is particularly linked to the increasing dependency of our economic and technological base upon information technology, and it is carried out in cyberspace. This threat can be driven by three sorts of motives.

- **Antagonistic attacks.** This is the deliberate effort to hurt another actor by damaging its functional base, and is particularly linked to our increasing dependency on information technology. Examples of cyber attacks include the attacks on NATO in connection with the war against Serbia in 1999, the crude but massive information attack on Estonia in May 2007, the attacks on Georgie in August 2008, the reports in 2010 of massive sustained efforts to infiltrate the information systems governing almost all parts of the Norwegian national technological infrastructure (water, energy, communications, government, media, etc.) and the Stuxnet attack on the Iranian nuclear programmes in 2010.

- **Profit.** This is the effort to exploit information systems for gain. It can be either criminal (money) or power political (information) but it does not involve any intent to cause immediate harm. Indeed, it depends on not being detected, and thus seeks to avoid any noticeable disruptions. However it can cause serious damage as a by-product. This can either be by damaging the information systems themselves, or, more seriously, by damaging the credibility of the system itself. This can be particularly devastating in the financial sector, where credibility is all, and which is subjected to massive and constant penetration efforts.

- **Mischief:** a smart individual or network that thinks it is fun or challenging to penetrate cybernetworks. This need not involve any intent to cause damage, but can have serious consequences ranging from damage to the systems themselves to the potential for antagonistic or profit driven attacks.

The third set of generic problems is inherent weakness. This consists essentially of practical problems linked to the design, maintenance and management of the functional systems. There is little intent to harm here, just incompetence. However this can also generate existential threats. One such example affecting our technological base was the Y2K alert, with the risk that the worlds computers might crash at the turn of the century. We will will never know if this was a real risk since we spent untold billions of dollars and man-hours trying to prevent the crisis. However we do know that it would have had existential consequences had it materialised, potentially bringing down our functional base and with it the entire global political system as we know it. A second example of an existential threat, this time to our economic base, is the near meltdown of the global financial system in September 2009. This is an example of disastrously bad management. Nobody attacked the system from without, it simply imploded from within because it was badly run. The consequences could however, once again, have been cataclysmic, involving a collapse of similar magnitude to that presented by Y2K.

The above challenges can give rise to two generic problems. First weakness: a lack of functional skills and tools that reduce one’s physical power over the material world and makes us more helpless. Second, resulting from this, hardship: lacking the knowledge, tools and products needed to provide the comforts that are the material foundation of satisfaction and empowerment and that support structural stability.

**2.3.4. Multidimensional Challenges**

Finally the dynamics and interaction between the three dimensions presents one deep ‘multidimensional’ challenge. This is the increasing complexity and unpredictability of our security environment. It is caused by at least two factors. First, the intensified interconnections between all the critical nodes of the security map. Today changes in one variable rapidly ricochet between dimensions, affecting a far greater and more diverse number of other variables at greater speed than ever before. Second, the consequences of their interaction is both far more rapid and deeper than before. Today’s changes jump across dimensions and fuse, mutate or disrupt in more unexpected ways. The overwhelming complexity and dynamism of our...
security environment makes it more volatile and unpredictable which makes it harder for us to identify, understand and forecast threats.\footnote{Cf: TALEB, Nassim Nicholas: *The Black Swan. The Impact of the Highly Improbable.* Allen Lane, London, 1\textsuperscript{st}. ed., 2007: pp. 366.} We thus need not only a broad static security map, but also a dynamic map illustrating the synergies, interaction and impact of the various subcomponents.\footnote{The most elaborate efforts to develop such a dynamic security map that I have seen are the Risk Interconnection Maps developed by the World Economic Forum in the last two years editions of their annual Global Risk publications. Cf: Global Risks 2010. A Global Risk Network Report. World Economic Forum in collaboration with Citi, Marsh & McLennan Companies (MMC), Swiss Re, Wharton School Risk Center and Zurich Financial Services, Geneva, January 2010: pp. 51. Another good example of holistic and synergistic analysis, laudable both for their systematic rigour and clarity, are the Global Strategic Trends reports of the Development Concepts and Doctrine Centre (DCDC). Cf their latest edition: Global Strategic Trends - Out to 2040. DCDC, Ministry of Defence, London, 4\textsuperscript{th} Ed. January 2010: pp. 168.} 

This in turn calls for a shift in our analytical approach. In today’s environment our principal challenges are not only individual events but also the synergic challenges that the complex interactions of the megasystems themselves give rise to. Under these conditions we can no longer afford the luxury of yesterday’s reductionist approach, isolating parts of the whole into narrow segments with identifiable simple linear causalities that could be test or verified statistically. Such specialised expertise is still needed, but it needs to be complemented with broad holistic and synergistic analysis, embracing the megasystems as a whole.\footnote{Cf for instance: WILSON, E.O.: *Consilience. The Unity of Knowledge.* Little, Brown and Co., London, 1\textsuperscript{st}. ed., 1998: pp. 374.} This of course has drawbacks, as it is both based on fuzzy methodology that does not sit well with established ‘scientific’ principles. It also provides a fuzzy and uncertain overview of the whole. However it is nevertheless necessary, since the stovepiped focus on individual trees both risks missing critical trees that lie outside preconceived perspectives, and is unable to help us understand the megasystemic dynamics.

Finally, on a more practical level, the increased uncertainty of our environment also calls for adjustments in our entire approach to security management. Hitherto this has been largely based on identifying threats, assessing their potential severity and likelihood and developing plans to deal with them, either proactively, by deflecting or neutralising them before they become critical or else, if this is not possible, retroactively, by neutralising them once they emerge. However in a world where we cannot identify threat with any certainty, and where severity and likelihood are extremely difficult to quantify in any meaningful way, we must complement the planning-based strategy with two other approaches.

- **Agility.** The ability to dodge threats that emerge with very little warning.
- **Resilience.** The ability to recover from threats that have struck and that one has neither been able to neutralise beforehand or dodge in the last minute.

Of course this does not mean that we should abandon planning based security strategies. Partly because there are a number of things that we can foresee with some degree of certainty, and partly because resilience depends on planning, but in this case planning directed towards developing a more resilient functional and social base. However the above two are critical complements to planning based security strategy, and could well emerge as our principal approaches as our environment becomes more volatile.
3. TRENDS

This section outlines the key trends that we can identify at present and that are affecting the critical security sectors outlined above.

3.1. Multidimensional Trends

Underlying the trends within the three dimensions are at least four megatrends. All are essentially technology-driven, with the first two associated with the Third Wave and the second two with what may be the Fourth Wave of Toffler's scientific-technological revolutions.

3.1.1. Third Wave

We are in the midst of two deep trends driven by what we may call ‘Third Wave’ technologies. They are the shrinking world and the increasingly liquid world. Both are essentially technology driven, but they have a profound impact on the human condition.

Shrinking World

Today’s scientific and technological revolutions are shrinking the world in four ways:

- First, in the ecological dimension, by vastly increasing the human impact on our natural environment. Humans are now depleting, degrading and and disrupting the global ecosystem on a massive scale. Ecologically we have entered a finite world with increasingly damaged components.

- Second, in the social dimension, technology is removing geographical distance. The world is becoming a global village whose members live in increasingly intimate physical and virtual contact. Both positive and negative energies now spread across the world and penetrate all societies, no matter how affluent or impoverished. This is also creating new relationships, new tensions and new interactions, including violence, between societies that formerly were decoupled and unaware of each other.

- Third, in the functional dimension, by meshing an ever greater range of economic and technological elements. These expanding functional networks provide material benefits but also generate vulnerabilities and complexities that are beginning to surpass the control of the architects.

- Fourth, technology is enabling all this to take place at ever greater speed. Temporally we are moving towards a world with ever less time, or rather, where the tempo of events is becoming more rapid.

Liquid World

As a result, the world is not only shrinking, but also becoming more fluid (or liquid, to borrow Zygmunt Bauman’s excellent term). This is a further consequence of the revolutions in communications technologies. The increasingly free flow of commodities and people is gradually undermining structures built up during the industrial age, largely centred on the state as the main centre of power. Today, new power networks and critical relationships are emerging in the transnational sphere, beyond the control of the state. Thus yesterday scientific and technological advances took place almost exclusively within the confines of the state. Today cutting edge research and development is increasingly shifting to the private sector. Yesterday, almost all economic activity was subject to the authority of the state. Today, with global production, markets and finances, the major transnational corporations operate largely independently of any single state. Yesterday societies were nationally and even regionally rooted, with strict limits on their ability and permission to move between states. Now individuals can float almost freely across the world. Today an estimated 500,000 Swedes are permantly residing abroad, with another 500,000 joining them temporarily at peak tourist seasons. At the same time an increasing number of foreigners are flowing into Sweden, with an estimated 400,000 persons of Muslim origin alone estimated as having moved into Sweden in the last decades. The world is flowing into Sweden, and Sweden is flowing out into the world. And so forth, the list is long.

The net effect of the shrinking and liquefying world is a period of global turbulence and instability in all

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three security dimensions. We have entered a volatile and unpredictable age.

3.1.2. Fourth Wave

At the same time we may be on the threshold of the fourth scientific and technological wave. The fusion of these technologies will likely generate several new megatrends. This is of course highly speculative, but these, or similar, changes, would probably transform our environment (and ourselves) massively.

- **Pervasive sensor grids** (PSG), resulting from a fusion of nanotechnology, sensor systems and wireless networking, leading to a massive multiplication of diffuse sensor systems monitoring individuals and the environment. These can be both embedded (microchips on objects and in humans and animals) and seedable (minute ‘swarm’ sensors that can be seeded in an area for various lengths of time).

- **Swarm technology**, resulting from the fusion of nanotechnology, artificial intelligence, wireless networking and PSG. These will consist of clouds of minute robots, operating as networked swarms, each with partial and specialised capabilities, but with collective capabilities to perform a variety of tasks, from surveillance to destruction.

- **Cyberdominance**, resulting from the exponential increase of information flows, strongly linked to advanced information management, revolutionising the efficiency of our flows and assets. This will inevitably shrink the private sphere of individuals, but also increase the importance of information flows, management and harvesting. Companies like IBM, General Electrics, Siemens and Google are focussing strongly on this, with IBM now focussing on this almost exclusively.

- **Post-human world**, resulting from two other technological streams, associated to the above but with a slightly different focus, may be leading to what Christopher Coker calls the ‘post-human world’. The one trend is robotics, with the development of increasingly sophisticated artificial beings. This involves the continued exponential increase in processing power coupled to increasingly sophisticated artificial decision-making. This could give birth to the first robots with broad cognitive awareness. Another stream starts at the other end, enhancing human biological and cognitive systems to the point where we also become increasingly distanced from our biological origins. This endosystemic manipulation of biological entities is already taking place through organ transplants, artificial body parts and cloning. However this could undergo a real revolution once biogenetics become more advanced.\(^{11}\)

3.2. Ecological Trends: Our Deep Existential Security Crisis

The dominating ecological trend is a descent toward an ever deepening global crisis. As noted above this is more than climate change, and is driven by the four big ‘D’s:

- **Depletion** - of non-renewable resources (oil, minerals, biodiversity)
- **Degradation** - of regional biotopes providing renewable resources (water, fish, arable land)
- **Disruption** - of the global ecosystem (climate change).
- **Disaster** - on a massive scale from industrial/scientific accidents (Chernobyl, Mexican Gulf, etc.)

3.2.1. Current Situation

The four negative drivers above are distinct even if they are closely interwoven. They have already shaped our environment in two deep ways:

- **Ecological scarcity**. Depletion and degradation are leading to increased scarcity of critical raw materials. This will in turn impact on both our social and functional security: increased prices affect the global economy; shortages of immediately vital commodities such as food can lead to social unrest; depletion of traditional forms of livelihood can lead to criminal activity (piracy) or mass migration (Darfur, EU); and control of scarce resources can be exploited for political extortion between states. At its most severe the quest for scarce resources could lead to the use of violent force to gain control over areas with vital commodities. Here the rising importance of the Arctic, both for natural resources and as a major potential shipping route between North Asia and the North Atlantic, is of particular concern for the EU. It is also entirely possible that potable water will in the future be traded at prices

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comparable to oil today, in which case future water-rich regions, such as Scandinavia, could acquire an entirely new strategic and economic value.

**Ecological turbulence.** Degradation and disruption are leading to two types of instability. On the one hand increasingly *acute climatic extremes*. These can damage our critical infrastructure, from extreme storms such as Hurricane Katrina, to specific recurring crises such as flooding or extreme heat with attendant fires. On the other hand we also see increased *chronic changes in our habitat*, such as gradually rising sea-levels and desertification. These can lead to human migration. This is already taking part in the poorer parts of the world as a result of desertification, but could also become a reality for the southern parts of the EU. In these areas water scarcity can become a fundamental problem for established societies, and combined with extreme heat can also lead to other dangers such a firestorms. This is already a reality for countries such as Greece and Australia and in California.

The ecological crisis has already reached the point where it is impacting directly on an increasing number of citizens and voters in the world’s wealthiest societies. As this trend grows it will probably raise ecological security to one of the top issues on the political agenda in coming decades. For the wealthy societies the ecocrisis will shift from a soft abstract concern to a hard, immediate and daily pain and occasional severe danger. As this happens it is likely that an increased emphasis upon global ecological protection will generate far greater clashes with the sovereignty principle than universal humanitarian values do today. We could witness increasingly severe conflicts between states and societies insisting on the need to protect global ecoassets and services, wherever they are, and states insisting on their sovereign integrity.

### 3.2.2. Three Deep Trends in the Ecological Dimension

All indicators today are that the global ecological crisis will continue to worsen. The question is how deep and how fast it will decline. By 2030 both ecological scarcity and turbulence will probably have increased significantly. While improved green technologies will reduce the human impact on the environment current indicators are that they will not be sufficient to reverse the trends nor to slow them down significantly.

**A. Greater ecological scarcity**

Continued depletion of non-renewables (energy, minerals, biodiversity) and degradation of renewables (air, water, fish, arable land, etc) will have ever stronger social and political consequences. On the one hand increased social stress among all the world’s societies, including the wealthiest. Scarcity and deprivation could have three main consequences in the social dimension: instability and violence from increased misery and anger; escalating migration flows from efforts to flee deprivation; and violent conflicts from the struggle for access to the remaining resources. The impact on the functional dimension will primarily economic, from rising prices of scarce vital commodities (energy, water, food). Our technological infrastructure will to some extent be affected by scarcity of rare minerals. When we get that far, the transportation sector will be severely hit by diminishing oil supplies.

**B. Greater ecological turbulence**

Continued degradation of regional and global ecosystems are likely to lead to more climatic extremes (rain, heat, storms), transformation (desertification, rising sea-levels) and shocks (pandemics). All of these will be enhanced by increased urbanisation, especially when this rests on a weak functional base, as it will in the poor megacities. The social and political consequences of turbulence include increased global social stress from the disruption of traditional lifestyles and habitats, rising costs and increased migration. The functional impact will include both rising economic costs from natural disasters as well as increasing disruptions in the global technological infrastructure.

**C. Ecosecurity will rise to the top of the security agenda**

As the above two trends impact on elite societies it will place ecosecurity to the top of the security agenda, nationally, regionally and globally. By 2030 we can expect that this will be one major factors dominating the politics and shaping our military mission profile.

### 3.2.3. 2030 - Two deep uncertainties

How strongly the ecological crisis impacts on our future security environment will depend on three key factors. First, how deep the ecological crisis itself becomes and how severely it affects the social and
functional dimensions. Second, the extent to which we can find technological solutions to mitigate the ecological crisis. Third, how the social dimension reacts. The critical variable being if non-zero sum political cooperation prevails, or if scarcity and turbulence generate a degree of pain and desperation that drive us, like rats on a sinking ship, towards an increasingly desperate zero-sum scramble for the remaining ecological scraps. These two alternatives are outlined below.

A. The Ecoagenda in a Non Zero-Sum World

In a non-zero sum political climate policies are likely to range from the soft to the moderately hard, but short of endemic violence. This includes three sets of agendas.

The soft agenda includes our attempts to understand what is happening, the consequences and what we need to do to reduce the crisis. This is the domain of science. A second soft agenda is to introduce ecofriendly technology to reduce the human imprint. This is the domain of technology and economics. Neither of these per se impose any major social costs.

The medium agenda consists of the effort to regulate our behaviour in order to reduce our impact on the global ecosystem. This includes both multilateral regulatory efforts but also regional and national regulations. In the latter case this could cause tensions with other actors that have not been willing to accept the regional or national standards. Another regulatory mechanism could be the economy itself, in the form of rising prices and an increasing awareness and inclusion of the cost of the ecoservices. Both of these could involve varying levels of social costs such as reduced economic growth rates, reduced consumption and unemployment.

The moderately hard agenda includes two more forceful operations. On the one hand ecoprotection, through policing operations to ensure that regulations are being respected. A current example of this is fisheries protection, but by 2030 it could be extended to many more areas. A second more forceful operation still would be ecoenforcement, in this case involving global military power projection to protect ecosystems considered crucial for the functioning of the global ecosystem, such as rainforests. Both protection and enforcement could generate considerable political tensions with any actors that were not party to the agreements. However in a non-zero sum world we can expect that the majority of the key actors would have agreed to the critical regulatory measures, either by universal mandate (eg the UN) or regional agreements. They might lead to conflict with minority violators, but would not lead to major multipolar confrontations.

B. The Ecoagenda in a Zero-Sum World

In a zero-sum world the impact of the ecocrisis will be much harder. Medium hard agendas would include setting unilateral standards for national territories or forming alliances for to regulate regional ecointerests. It could also involve forming alliances to protect, acquire or exploit scarce resources.

The hard agenda could include the unilateral or alliance use of force to protect or exploit resources, in the worst case in the form of broader global power political competition for access and exploitation of scarce resources, including the use of force (‘resource wars’). 12

We are currently still dealing with the ecochallenge in non-zero sum terms. The scientific and technological approaches are currently strong, but the multilateral agenda so far largely failing (Kyoto, Copenhagen) and we have only limited examples of successful policing and protection (Barents). There is a great danger that as ecoscarcity increases the resulting desperation will generate a negative political spiral towards increased zero-sum competition.

3.3. Social Trends: Greater Multipolarity and Greater Transnational Pressures

Our social dimension is in the midst of an historical shift from the Westphalian to the globalised age. Technology is shrinking the world and increasing the intimacy between global societies at the same time as these societies are being transformed - some for better and some for worse - by the massive intensification and spread of economic activity. This has two deep consequences. Firstly, the political fault lines generating violent confrontation are shifting from yesterday’s horizontal peer competition between elite

12 Cf for instance KLARE, Michael: Resource Wars .
states towards vertical tensions between unequal strata of world society. Second, all global socio-economic strata are experiencing increased domestic turbulence as their structural foundations are eroded by globalisation.

3.3.1. Current Situation

Today’s global security-political map increasingly resembles an hierarchical class society, which, elaborating on Robert Cooper and Thomas Friedman, and simplifying greatly, can be described as an hierarchical class society of six layers in three broad categories:

**Globalisers**
- TNC: Transnational Corporations
  - Example: Fortune Global 1,000
  - Share of world pop.: 0.1%
- PMC: The Postmodern Community
  - Example: OECD +
  - Share of world pop.: 15%

**Transformers**
- RTS: Rapid Transition Societies
  - Example: China, India, Brazil +
  - Share of world pop.: 5%
- SMS: Struggling Modern States
  - Example: Much of the Arab World
  - Share of world pop.: 10%

**Alienated**
- AMS: Alienated Modern States
  - Example: North Korea, Burma, Russia?
  - Share of world pop.: 5%
- PMS: Premodern Societies
  - Example: The Bottom Billion
  - Share of world pop.: 65%

The **Globalisers** are the principal stakeholders in the political, economic and social world order that emerged with the collapse of the Cold War. They include the Transnational Corporations (TNC) and the Postmodern Community (PMC) of leading states (OECD +). These include the wealthiest, and, until very recently, most powerful societies in the world. Their worldview is dominated by a non-zero sum mindset.

The **Transformers** identify with the globalising world order to varying degrees. The Rapid Transition Societies (RTS) have the strongest links. Their economic and social development are the big success stories of economic globalisation (China, India, Brazil, +) while their dependence on the globalising economy make them strong stakeholders in economic globalisation. The rising living standards of a significant part of their societies also make them emerging social stakeholders. However their remaining domestic instabilities and in some cases authoritarian political legacy make them only partial political stakeholders. Nevertheless their Westphalian zero sum political instincts are strongly tempered by their economic integration and dependence upon the globalising world.

More ambiguous are the Struggling Modern States (SMS). Their régimes generally strive to develop along the globalisers model but their ability to do so is limited to varying degrees. Their integration in globalisation is thus more tenuous at the same time as they struggle with greater domestic problems.

The **Alienated** include the Alienated Modern States (AMS). These are regimes that consciously reject the globalising model either politically or economically. Extreme examples are North Korea or Burma, while the Kremlin is a more ambiguous case. These regimes possess the trappings of the early industrial age - authoritarian rule, crude heavy industries and primitive military force - and are driven by a strong zero sum mentality.

Right at the bottom of the global strata are the very poorest **Premodern Societies** (PMS). These are areas of very poor and often miserable societies. Their alienation is enforced by their poverty. In most cases the foundations of their traditional lifestyles have been removed under the industrial age and by the rapid onset of globalisation, with no new means of livelihood to replace them.

The fault lines between these global socioeconomic strata are the principal sources of violent social tension in the globalising world. These are influenced by at least three positive and four negative trends:

- On the positive side, globalisation has removed the westphalian paradigm of zero-sum competition and violent conflict among the leading states. Within the elite societies rising domestic structural stability coupled with increasingly profitable and enjoyable interaction between states and societies, gave birth

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in the last half of the 20th century to a Liberal Age in which non-zero sum cooperation dominates.\textsuperscript{14} However this beneficial condition depends entirely on the health of the functional dimension - that is to say on a thriving globalising economy and technological infrastructure. If either were to crash, or if we entered a long term economic depression, the functional preconditions of the Liberal Age could collapse. This could trigger an historical regression back to westphalian zero-sum competition, with impoverished and angry societies reverting to isolated and mutually hostile national chauvinism. While such a drop would probably not be permanent, it could - like the first half of the 20th century - be very unpleasant while it lasted.

\begin{itemize}
\item A second positive development is that globalisation is vastly increasing the stakeholders economic, technological and scientific power. This provides us with substantial resources to address the problems we face. In this respect we are not bankrupt. However at the same time this increase in power has multiplied the expectations of our populations. Especially in the formerly wealthy welfare states of the ‘old’ EU, societies now expect almost absolute security and ever greater comfort and hold their politicians accountable for this. This pressures politicians to provide short-term gratification at the cost of long-term priorities. We have the skill and the tools, but not the will and \textit{virtu} (\textit{virtu} in Machiavelli’s sense of the term). On the positive side, these same conditions allow an historically unparalleled degree of entrepreneurship to those individuals with the will and skill to do so.

\item Third, economic globalisation is lifting a significant share of the world’s population from deep poverty to agreeable standards of living. Over the long term this growing global Middle Class reduces social tensions and enhances peaceful political relations, at least within this emerging community. However in the short term the rapid transformation of these societies from deep rural poverty to urbanised prosperity entails significant instability. This is most evident in the rapidly emerging societies and is one of the great problems facing China. Finally, a deep problem is that increased numbers of global wealthy consumers impacts negatively on the global ecosystem (see below). Solving this deep paradox between promoting socioeconomic prosperity in order to enhance social stability while containing the massive damage on the global ecosystem from increased consumption and pollution is one of the big challenges we face.

\item Fourth, moving towards the debit side, the same economic globalisation is placing increasing pressure on the world’s wealthy societies - especially the western European welfare states - in a reverse process. These societies are no longer at the summit of the global economy but must now struggle increasingly hard to compete with the rising economies. Adjusting to the new global economic realities has two consequences. First, the lazy and spoiled welfare citizens of western Europe once again need to work and especially study harder, something which is singularly unpopular. Second, increasingly strained state budgets mean declining public services, resulting in rising dissatisfaction and social problems. An extreme recent example is the four eurozone PIGS, who, having lived beyond their means, now face either extreme austerity measures or bankruptcy. On a less traumatic, but deeper and far more serious level, the same challenges apply to key EU societies such as Great Britain, France and Germany. The danger here is of rising domestic dissatisfaction and turbulence.

\item Fifth, economic globalisation is also leading to a global geopolitical power shift, as major new economic powers emerge alongside the leading Westphalian powers. This can be positive if old and new powers become cooperative stakeholders and find a way to share global governance. If however it leads to a new form of multipolar zero-sum power politics then it can present a massive geopolitical challenge, in the worst case involving armed conflicts between established and rising global powers. The critical factor here is whether the glue of global economic and technological integration will outbalance potential political tensions. At the same time however ecological scarcity and turbulence will almost inevitably increase, escalating the potential for multipolar strains and conflict.

\item Sixth, on the negative side, world society remains divided between rich and poor and the divide is growing. This is not new per se, but when combined with the very new and increasing global social intimacy it creates a novel political fault line. The strains between the global rich and poor living in increasing intimacy are giving birth to new parameters of political tension and violence. These span a host of problems, including transnational terrorism, global crime, uncontrolled migration, refugees, regional instability and so forth. The problem here is that the misery and rage in large parts of the SMS
\end{itemize}

and PMS are increasing. Coupled with greater global intimacy the result is a global village on the verge of revolution, where the ills of the poor permeate the rich societies ever more strongly.

Finally, the information and communications revolutions are leading to a global cross-fertilisation of cultures, societies and individuals. A negative consequence is that this homogenises global cultural diversity, impoverishing the world’s cultural heritage. On the positive side the new interconnectivity is boosting creativity and knowledge, giving birth to a new globalising civilization.

In the social dimension we currently have two core strategic tasks. On the one hand to sustain the liberal world order to which we gave birth during the Cold War and which shelters and nourishes the globalising world order. However we no longer dominate the political arena but must increasingly share it with the RTE. Our task is thus not so much to enforce our order as to act as a midwife for a new form of global governance, incorporating new actors, new societies with different civilisational backgrounds, a new technological and ecological environment, and new power relationships. If the RTE can continue their economic and social development they will almost certainly mesh ever closer with us over time. The problem is that the imminent short term problems facing them - domestic, economic and ecological - may overwhelm the long term process, leading to a more tense multipolar competition with a weaker PMC.

The second core social challenge is to reduce the misery of the world’s disenfranchised societies and thus to reduce the host of transnational security challenges they present and avert the time bombs of violence they contain. The problem here is that conditions among a large majority of the world’s most miserable societies are actually worsening, despite our efforts. If this trend continues, and our societies and economies tire of the burden of our addressing these problems at source, we risk pulling back to a more defensive strategy of barriers and containment. This could well however become even more of a losing strategy, as it is both very difficult to contain transnational flows in a liquid world, and as it would not solve the root causes of the problem.

Both of the above will in turn be deeply affected by the changes taking place in our functional and ecological security dimensions.

3.3.2. Two Deep Trends in the Social Dimension

Core trends in the social dimension are deep transformation and turbulence within all global social strata combined with constantly increasing global intimacy. Among the top global socioeconomic strata we may see either a continued functional integration coupled to a gradual shift towards ever more non-zero sum politics between the stakeholders, or else a decline towards harder power politics. Among the poorer global socioeconomic strata we will almost inevitably see greater poverty and misery. The resulting increased global polarisation will lead to increasing tensions with the rich part of the world, manifesting themselves in a host of transnational challenges.

A. High Politics: Increasing Peer Turbulence

Two trends are contributing to increasing turbulence among global lead actors. First, peer transition, as the world’s former leading states decline while new states rise. Second, peer diversity, as a host of new, often non-state, actors attain significant power. The net effect is increasing multipolarity and political turbulence as new power relations are established. It may also lead to hardening power politics and a decline of multilateralism if the lead actors are unable to reconcile their vital interests.

Peer Transition

The group of global lead states is enlarging as the former PMC elite begins a relative economic decline at the same time as the RTE emerge as global economic powers. Yesterday’s top-dog societies - the OECD Community plus - are now gradually having to share their peak position with the rising powers. As a result the old established world order will - for better or worse - have to adjust to accommodate the views and interests of the rising powers. From a broad perspective this implies greater instability and more fragmented grand politics as a less cohesive global elite shakes into its new roles and feels its way towards a new political system. This is compounded by the fact that while the emerging powers have significant economic power they are often not yet prepared or capable of shoulderig the extremely demanding and sophisticated diplomatic mantle and responsibility that comes with global power. At the same time however their global interests and influence do not allow them to avoid engaging in complex and decisive global issues. For the former elite this development also has two negative consequences. First, they can no longer dictate the essential terms of global politics: global politics are no longer their
exclusive domain. Second, their domestic structural stability will decline to varying degrees, providing a less stable social base and possibly less freedom of manoeuvre in grand politics. (See section B. below.)

The rise of the new powers has both positive and negative implications. The positive factors are twofold. First, the emerging elite will per definition be stakeholders in the global functional system (economic and technological) since this is the source of their power and the platform on which they have risen. Today broad power is only possible for those who successfully globalise. This has three key consequences. First, it generates very strong shared vital interests in protecting and nourishing the functional flows, since they are the foundation of the stakeholders power and prosperity. Second, it makes it more difficult for the stakeholders to engage in violent confrontations between themselves, since this risks collapsing their functional base. Finally it generates a strong non-zero sum cooperative culture among the stakeholders.

The second deep positive consequence is that the rising domestic prosperity of the globalisers increases their structural stability, which in turn both facilitates and demands a shift towards softer, more liberal, politics. On the other hand their domestic conditions will remain fragile for some time to come, with the corrosive danger of corruption and organised crime and the explosive dangers from potential outbursts of national chauvinism.

A neutral consequence of their rise is that these societies naturally have their own cultures and concerns and are not likely to mirror-image the values and political culture of the establishment. This means that the former elite will have to get used to sharing and compromising to a far greater degree than before. Twenty years ago we thought that the rest of the world would rise and emerge in our image. Today we know that we can at best hope to shape the new world together with the rising powers. And this means that we will have to compromise and adapt on all levels - culturally, politically, socially and economically.

Finally there are two negative aspects. The first is that all of the RTE’s still retain elements of authoritarian power to varying degrees, considerable structural instability and serious and growing ecological problems. As a result there is an inherent residual potential for hard power westphalian politics. Second, they will (perhaps rightly) perceive that the established states have tilted the global table in their favour with an attendant desire to redress the imbalances. This could generate mutual tensions and suspicions among both the RTE and PMC. While both sides shared functional interests probably will overshadow these latent tensions under normal conditions, they could emerge suddenly and forcefully in crisis situations, particularly if the global functional glue were to weaken.

The net effect is that we are inevitably moving towards global multipolarity among the worlds great powers. The key question is whether this will be soft or hard multipolarity. Under soft multipolarity their joint functional interests will overshadow differing political agendas. Under hard multipolarity zero-sum competition will prevail, including a return to violent confrontations. The strength of the functional dimension thus acquires a primary strategic importance in its own right (See section 3.4. below).

**Peer Diversity**

A second among the elite actors, closely associated with the above, is increasing diversity of interests, agendas and even core characteristics. One aspect was described above, as the split in priorities and agendas between the rising states and the declining established states. A second, deeper source of diversity is the emergence of non-state actors with significant powers and vital interests that diverge to varying degrees from those of the lead states. These non-state actors can be roughly divided between Global Citizens, or transnational actors that are part of globalisation and share its basic values and interests, and Global Barbarians, or transnational actors that either oppose globalisation or engage in activities that damage it. Key Global Citizens are the Transnational Corporations (TNC), Global Cities (GC) and Civil Society (CS). Key Global Barbarians are Transnational Organised Crime (TOC), Transnational Revolutionary Movements (TRM) and Assorted Mischief (AM). Many of these are now acquiring a degree of power in their domains that both generate strong independent interests and allow them to pursue these interests. The lead states will thus have to contend both with a new set of influential non-state partners among the Global Citizens, but also challengers among the Global Barbarians. This will considerably diversify the political landscape and interaction.

**Net Effect**

Peer transition and diversity are likely to have two basic consequences. First greater multipolarity as the diversity of actors and interests dissolves the unipolar moment at the end of the Cold War. Second greater political turbulence, as the greater diversity of interests of lead actors emerge. The extent which this leads
to harder zero-sum power politics is unclear. It will depend on four key factors:

- First, the nature of the lead actors themselves.
- Second, the strength of functional globalisation and the glue it excerts on non-zero sum cooperation.
- Third, the severity of the ecological crisis.
- Fourth, how deep social stresses rising structural instability will exert.

Under all circumstances the ‘West’ has peaked. Members of the OECD community will remain among the leading actors, but they will no longer be primus or even primus inter-pares, but simply inter-pares. Global politics will be driven by a far more diverse set of leading actors.

B. Low Politics: Increasing Transnational Problems

As technology transforms the human and planetary condition it also leads to massive turbulence in all layers of global society, from the richest to the poorest. While not all trends are bad, they all involve varying degrees of structural instability as societies struggle to transform and adjust, or simply to survive.

Growing global middle class

A very positive trend is that a significant and growing share of RTE societies (China, India, Brazil, et al.) are rapidly becoming wealthier. Over the last twenty years an estimated 400 million people have raised themselves from the deepest poverty to roughly our standards of living. Never before in history have so many been lifted from so deep poverty in such a short time. This is one of the great success stories of economic globalisation. This also has a deep positive effect on global politics as it increases structural stability in the societies concerned, empowers a greater share of global human capital and spreads the sphere of liberal politics. What is more, that number can be expected to double in the next decade - if the global economy does not crash or depress.

Drawbacks are the negative impact on global ecology if all these people are to consume and pollute as much as we do. This will to a large extent be offset by technological advances and greater moderation in consumer regulation, awareness and behaviour, but it will nevertheless present a major problem. A second drawback is that this still only represents a small share of the global population, with some 40-60% remaining very poor or desperately miserable. Thus global social tensions are not over, though a greater share of the world’s population are beginning to enjoy comfortable living standards.

Increasing global structural instability

A second trend is the increasing global domestic turbulence in all global socioeconomic strata as they undergo deep change. They are however all affected in different ways:

- PMC: Most individuals in these societies are empowered and comfortable, but they are lazy and spoiled. Getting use to lower standards of living, working and studying harder and less public services will make them grumpy at best, violently national chauvinistic at worst.
- RTE: A rising share of these societies is becoming empowered and richer. There are also strong expectations for a better future, with hard work, ambition and hope. They are moving from poor to comfortable living conditions rapidly, increasing stability but also overturning traditional social structures, creating considerable if transient social pressures. As long as their economies rise these can be channelled into the general progress, but serious domestic instability or violence could rapidly emerge should growth slow down or stop.
- SMS: Citizens here have little chance to improve their personal destinies, there is restricted political freedom, but they are not starving or subjected to anarchic violence. However they are stuck with high unemployment or very poorly paid jobs. Traditional rural life is largely uprooted and urban life is liveable but highly unsatisfactory. For those unable to migrate there is rising frustration, resentment and anger. This could be called the seedbed of revolutions.
- AMS: These societies live under authoritarian regimes that are alienated from globalisation and generally see it as more of a threat than a model. Their citizens have desperately miserable living conditions (North Korea), or are very poor (Burma, Laos) or are living in gradually declining economies (Venezuela, Iran, Russia). These societies are repressed but stuck and often resigned due to the political repression.
- PMS: Finally at the bottom are the helpless, miserable and suffering masses, whose traditional ways of life have been removed, with little or nothing to replace it. Conditions here are desperately poor and often violently dangerous, with little hope except to flee.
The gradual economic decline of the OECD community has three consequences. First declining standards of living. Second, increased pressures on their citizens to work - and in particular study - harder, in order to remain competitive in the globalised economy. Third, declining public services as state budgets shrink. For the spoiled and lazy populations of the western European welfare societies these three trends - declining standards of living, the need to work and study harder and decreasing public services - will engender rising dissatisfaction and possibly political tensions. Under current economic conditions these can probably be managed, but should we face a longer term global economic depression then they could well blossom and become more serious. In the worst case, they could lead to a rise of national chauvinism, rising extreme parties both of the left and right, and protectionist pressures.

Pervasive poverty

A serious negative trend is that overall global social conditions are declining. Today an estimated 60% - or some four billion - of the world’s population remain poor or desperately miserable. While a relatively greater share of the world's population is likely to join the global middle class or be lifted out of the deepest misery, current trends indicate that absolute numbers in deepest misery will remain or increase as the total size of the world's population rises from six to nine billion. Conditions for these 15% at the bottom of world society - what Paul Collier calls ‘the bottom billion’, could well get worse over the next two decades.

This is compounded by the failure of much of our efforts to improve the lot of the global poor. First, our barriers to trade remain in place, though many economists consider that removing these would probably have a greater beneficial impact than all other strategies combined. Second, a significant share of our development aid efforts are failing, as evidenced by the uncertain progress of the Millennium Development Goals. Third, the new agenda of forceful regime change, adopted in 1995 in the Balkans and globally after 9.11 2001, is largely failing. While it may succeed in near societies - the Balkans - it now appears unlikely - with some notable exceptions - to offer any quick solutions for more remote societies in Africa and South Asia. Currently the will and resources of the globalising community are being exhausted by one single effort - Afghanistan. While the situation is not black and white, the overall trend is negative. Thus, according to (CHECK SOURCE) conditions of life have improved for some 160 million of the world’s poorest, while conditions have significantly deteriorated for some 1.2 billion.

As a result we will continue to face significant and perhaps rising global socioeconomic tensions. Their impact on us will also increase. Among the 10% of the worlds population living in the stagnant but striving economies it generates frustration, migration (which we need but which becomes a major problem if it is uncontrolled), transnational crime and ultimately an ideological alienation from the globalisers which feeds transnational terrorism. Among the alienated régimes this means that their zero sum power political approach will remain. While among the 50% of the worlds absolute poorest it will generate even greater instability, migration and refugee flows.

Current indications are that our capacity to socially engineer better conditions in these societies will remain limited. While there is a chance that some of these societies can improve their living standards nevertheless, a significant degree of misery and tensions will remain or will increase. This has serious implications for our security strategies. First, it means that we will probably be forced to shift our efforts from engagement (trying to solve the problems at source) to barriers (trying to shield ourselves from it). Second, this means that the root causes of the problems will remain, at the same time as an ever more forceful rich-poor divide may create even greater tensions. Finally, it may help brutalise the rich societies values, reinforcing a decline of liberal politics.

Net Effect

This is likely to have three broad consequences:

**Thriving global revolutionary movements.** Deepening frustration in the SMS is likely to maintain or increase support for transnational revolutionary movements. They could in future link up with other anti-globalisation movements emerging with the RTE and PMC.

**Increasing transnational social problems.** The increased rich-poor gap and misery among the poor and poorest global societies will increase transnational social problems from organised crime, uncontrolled population flows, regional instability and disease.

**Maintained authoritarian repression.** Increased structural instability in all global strata combined with
the above two trends will enable (or require) greater repressive measures in order to maintain order. This will certainly apply to the poor but could in the worst case includ the richest. This will be boosted by revolutions in sensor technology.

3.3.3. 2030 - Three big uncertainties in the Social Dimension

Three big uncertainties dominate the forecasts in the Social Dimension. First, how hard will multipolar politics be. Second, how deep with the global rich-poor tensions be. Third, how far will the currently dominant liberal political culture recede.

A. Hard Multipolarity?

We will almost certainly live in a multipolar world with a greater diversity of key actors. Barring major collapse, the current OECD elite will be sharing power with the rising powers but probably also with the alienated regimes. Indeed, if our efforts to support the struggling modern states fail then we could face a far greater number of alienated powers. In the worst case these would be armed with short- to medium-range nuclear weapons. Another new form of actor will be non-state, including ever more powerful transnational business corporations, but also potentially more alienated transnational movements, ranging form civil society to anti-globalisation organisations with revolutionary agendas to organised crime.

In the softest scenarios all the key actors are stakeholders in functional globalisation, giving priority to their shared vital interest of protecting and supporting the global functional flows. In this scenario we may expect the TNC, PMC and NEP (Newly Emerged Powers) to work together to support the functional flows, and non-zero sum politics to dominate their stance on most key issues. Zero sum multipolar challenges would however prevail in the relationships with the AMS and alienated non-state actors such as transnational revolutionary movements and organised crime. With the possible exception of organised crime these would however not have the power to significantly destabilise global politics, though we could expect major regional tensions and even wars. However the elite stakeholder powers would be essentially supporting each other. A key question for Sweden under these conditions is whether Russia would belong to the stakeholders or the alienated regimes or be, like now, between the two.

In the hard scenario globalising economic and technological flows are still running, but the most powerful state actors give priority to other more divisive vital interests, such as domestic national chauvinist pressures or hard competition for natural resources. In this scenario hard multipolar power politics dominate, with a far greater emphasis upon the Westphalian use of military force as a normal instrument of political power. In this scenario stakeholder multilateral cohesion is replaced by smaller alliances with stronger zero sum relations.

One critical factor determining the degree of hard or soft multipolarity will be how strong the glue of global functional integration will be. This is dealt with in the next section.

B. Global Revolution? Increasing global class tensions

The second big uncertainty is how deep the rich-poor gap will be. If current trends continue it will almost certainly have become worse by 2030. Partly because our social engineering efforts are failing, and partly because the demographic trends indicate a massive increase in the number of the world’s poorest inhabitants.

This will almost certainly multiply the number and intensity of our transnational problems. These include: the potential for regional instability (RTE, SMS, AMS, PMS); the active challenge of stakeholder authority or world order (AMS, TRM -transnational revolutionary movements); severe ecodamage (RTE, SMS, AMS); stronger transnational organised crime (RTE, SMS, AMS); increased pressures from uncontrolled migration (SMS, PMS); increased refugee flows (AMS, PMS) and the potential for more extreme power politics as social stresses rise.

C. Decline of the Liberal Age?

Finally there is a possibility that we are moving towards the end of the liberal age. This is based on the premise that liberal politics to a large extent depend upon structural stability, that is to say comfortable and
satisfied societies, that can afford to be generous, and whose leaders can afford to relax authoritarian controls. This is for instance borne out by Ronald Ingleharts World Values Surveys.

The problem today is that yesterday’s liberal societies (some 15% of the world’s population, largely in the OECD community that formerly ran the world) are currently in a relative and absolute socioeconomic decline. This can have two consequences. First, social tensions within the liberal societies may increase, making them less liberal. Second, the global influence and power of the liberal states may decline. At the same time the rising societies (some 20% in the RTE’s) have not yet achieved a degree of structural stability generating pervasive liberal values and politics. Finally a large share of the remaining 65% percent of the world’s poor remain subject to conditions where they are either too dissatisfied and frustrated or too miserable to envisage liberal politics on a grand scale.

Coupled with rising ecological strains (instability and scarcity - see below) this could generate conditions which undermine the preconditions needed liberal attitudes to thrive in domestic and global politics. An important question in this context is whether the EU can survive conditions of increasing domestic hardship and dissatisfaction.

3.4. Functional Trends: Our Unrecognised Existential Security Challenge

The globalising functional infrastructure is of fundamental importance for our security. On the global level it is the foundation of the wealthy, peaceful and dynamic political system that emerged during the Cold War and on which the liberal globalised world order is now being built. Domestically, it is the source of structural stability and prosperity of all the globalising societies, from yesterday’s elite OECD states to today’s rapid transition economies.

Both the economic and technological components of the functional dimension currently have three characteristics:

- First, strong vitality and growth. The world has never before seen such rapid scientific, technological and economic development as now.
- Second, considerable vulnerability. The combination of economic hyperprofiteering (which leaves no slack and can lead to reckless risk), urbanisation (which makes humans totally dependent upon the functional system) and volatility (from the multidimensional global interconnections and complex synergies) is increasing our dependence upon and immediate vulnerability to the functional infrastructure enormously. At the same time the global economic and technological flows themselves are, to some extent, becoming more vulnerable.
- Third, an increasing awareness of the need to temper the vitality of hyperprofiteering and the comfort of indiscriminate consumption with greater functional resilience and ecological respect. On the one hand through governance, by seeking to establish national and international regulatory norms to safeguard functional stability and the environment. Though as we have seen most recently at Copenhagen, we will have a long way to go on this front. On the other hand this is also emerging in a natural manner, through scientific advances and market forces, which are unleashing technologies providing a greater degree of decentralisation and networked redundance and multiplying our intellectual power through communications and information.

3.4.1. Current Situation

Our functional dimension is currently characterised by positive trends on a vulnerable base. Overall the globalisers are steadily generating more economic, technological and scientific power, and they are not bankrupt when facing the rising social turbulence and ecological crisis. However this assumes we weather the current economic crisis and do not succumb to technological disasters - which admittedly are big if’s. This is where the vulnerability comes in. Urbanisation and increasingly immediate dependence upon complex and interconnected global economic and technological networks makes us far more vulnerable to catastrophic crashes in the functional dimension. This is reflected in the new emphasis upon this aspect of security (‘Societal Security’ in the EU, ‘Homeland Security’ in the United States and ‘Global Lifelines’ Madeleine Albright’s recent report to NATO).

The key challenge here is to ensure the health of the vital social, economic and technological flows on which globalised society depends. They are exposed to three essential types of threat:
First, human threats. This includes three sorts of motive. Antagonistic attacks to destroy functional life-systems (Estonia 2007), profit motivated efforts to exploit functional life systems (organised crime, corruption, cyber attacks against financial systems) and lastly mischief, individuals that simply think it is fun and challenging to tinker, but that may cause severe damage.

Second, inherent weakness in the functional system itself. They include problems of design (Y2K), problems of management (the financial crisis of 2009 and 2010), poor maintenance (US East Coast electricity grid failures), and several more.

Third is ecostress. This includes extreme weather phenomena (Hurricane Katrina), rising sea-levels (coastal cities), volcanic ash (air traffic), earthquakes (cities, internet cables) and a host of other examples. The problem here is partly increasing climatic turbulence linked to climate change, coupled with incompetent technological infrastructures that make them more vulnerable to ecological disruption than they need be. New Orleans is a prime example. Here greater ecological respect, scientific understanding and postindustrial technologies offer major solutions.

In all cases there is the potential for failures in our functional life systems that can lead to existential systemic collapse. Protecting ourselves against these includes optimizing and protecting the global flows themselves against the above dangers. However, this must be complemented with efforts to develop a functional network and base resilient enough to permit urbanized post-industrial societies to recover from the unexpected shocks and catastrophes that will inevitably afflict us.

Finally one must note the political impact of the functional dimension. This cannot be overemphasised. Even relatively alienated régimes such as the Kremlin, running primitive economies based on raw material extraction, largely isolated from the mainstream of the globalised economy and still believing in Westphalian power politics, cannot escape their interdependence on the globalised economy. As indicated by the collapse of the Russian stock-market after the Russian invasion of Georgia in 2008 and the general impact on Russian society of the global economic slump in 2009. While it is possible for régimes to try to cut themselves off from globalisation deliberately, the price tag is inevitably domestic weakness and poverty on a massive scale, coupled with either international pariah status (North Korea and Burma) or eclipse (Laos and to some extent Cuba).

All key global players are today embedded in the globalising functional web. Westphalian forms of insular multipolarity are thus being bypassed as the degree of functional interconnectedness erodes self-sufficiency. This has two consequences. First, that functional globalisation and power go hand in hand. The more globalised an actor becomes, the more economic and technological power it develops. Second, that globalisation is creating a new community of elite actors. The more globalised an actor becomes and the more dependent it becomes on the well-being of functional globalisation, the more of a stakeholder in globalisation it becomes. (Friedman)

This has three deep consequences:

- First, the emergence of a loose new global political and cultural community, consisting of the stakeholders in globalisation. This includes both the leading states in the world, but also and to an increasing degree the leading transnational corporations that are the vital life force driving functional globalisation. Finally it includes the individuals who are plugged in to this world and whose lives and empowerment increasingly transcend the confines of individual states. At this level one can speak of the rise of a new globalised civilisation. The existential dependence on functional globalisation, and the tremendous benefits it provides them in terms of power and structural stability, makes all these actors stakeholders in functional globalisation. They share a deep vital interest in making sure that functional globalisation thrives, even if significant political differences remain, especially between the PMC and RTE. However we are witnessing a shift of global political fault lines that are increasingly defined in terms of the globalising community (including both the PMC and RTE) versus the disenfranchised outsiders. This gap is one major paradigm defining and generating violent political tensions in the world today - both within and between societies.

- Second, global power - technological, economic, political and military - is concentrated within this proto-community. The outsiders (localisers in Friedman’s terms) are weak in almost all respects except the spiritual and - in some cases - ideological. There are deep historical parallels to former empires here, not only in the negative sense of oppression and exploitation, but also in the positive sense that within thriving empires we have historically seen law and order, prosperity and power and wealth and comfort, while outside the empire life has tended to be violent, hungry and short. In this respect the
globalising community resembles traditional empires at their peak. However the parallel cannot be
taken too far for the globalisers are a loose confederation of diverse, distracted and often weak-willed,
stakeholders with diverging agendas. The empire of globalisers share deep vital interests and an
increasingly fused culture, but lacks robust political coherence, shared norms and any sense of
collective virtu, in Machiavelli’s use of the term.

Third, the actors within this globalising community go not go to war with each other. Their internal
structural stability, deep interdependence and the overshadowing profitability of their non-zero sum
cooperation mean cooperation and soft politics dominate relations within this community. This is a
defining difference between the globalisers, whose worldview is dominated by non-zero sum thinking
(Richard Wright) and the alienated, whose worldview remains dominated by zero-sum thinking. (nb this
is more limited than the divide between soft ‘postmodern’ actors and hard ‘modern’ actors (Cooper).
One can be deeply globalised without being soft postmodern (United States, Singapore).

We have gone from westphalian power political poles (various shades of realists) to globalised functional
nodes (Castels). This however does not mean that power politics are over:

First, states are globalising at varying speeds and varying degrees. In most cases rising powers have
one leg left in the westphalian authoritarian and zero-sum age, and one leg in the globalised
interconnected age. Power politics thus remains a key factor, but one that is increasingly
overshadowed by the imperatives of globalised interdependence.

Second, Westphalian power politics could return again in force if functional globalisation were to
collapse. This can occur in many ways and could, if severe enough, lead to deep and violent historical
regression. This is outlined in more detail below.

3.4.2. Three Deep Trends in the Functional Dimension

The security consequences of a collapse of our global economic and technological foundations would be
massive. As noted above this would probably entail the collapse of the global and domestic political and
social structures that emerged under the last half of the 20th century and that underpin globalisation. In
this case we would likely enter an entirely different environment of poor, violence prone and mutually
hostile national chauvinist societies with limited resources at their disposal. This implies a transformation
of such magnitude as to undermine the parameters of this study and thus will not be examined here.

If we are able to avoid a collapse of our global economic and technological base we can envisage three
broad trends in the functional dimension that will influence our security environment in 2030:

A. Increased material power for globalisers

The likelihood that the stakeholders scientific, technological and economic power continues to increase is
high. If so, it will provide the resources and tools needed to address many of the problems we face in all
three security dimensions. In this respect we are not bankrupt, and we may expect technology to alleviate
many of our ecological problems.

Technology will also assist us to address our social challenges. However here we must keep in mind that
there are no engineering solutions to social challenges. In the Social Dimension the driving force is the
spirit of sentient beings, and the core activity of politics is the quest for influence over spirit. Technology
can only be used to assist this quest for influence - it can never replace it.

Finally the rising material power of the stakeholders is increasing the comfort and empowerment of a
greater share of the world’s population. This leads to greater structural stability within these societies as
well as greater functional and social integration among these societies. However it appears likely that only
a small part of global society will benefit from this, while a large share of the world’s population will be
excluded. Thus major instabilities will remain.

B. Increased priority of the Functional Security agenda

Second, the existential importance of functional globalisation will become increasingly apparent over the
next twenty years. The increasingly immediate dependence of the leading societies on functional flows,
combined with the unpredictable but almost inevitable functional shocks that will continue to come, will
raise Functional Security to the absolute top of the security agenda in its own right. This process will take
place in parallel on the domestic level (Homeland Defence, Societal Security), multilaterally and between
the private and public sectors, as it becomes more and more evident that no single actor can address the
global functional challenges alone.

Our dependency and vulnerability derives from four factors. First immediacy, from our growing lack of
redundancy, providing little slack to absorb shocks. Second interconnectivity, from the multiplying global
interconnections which allow shocks to spread and mutate. Third speed, allowing shocks to move faster
than we can react. Fourth complexity, from the combination of speed and interconnectivity, allowing the
shocks to emerge more suddenly and to mutate in unexpected ways.

At the same time the same factors also give us considerable strengths. The networked world also
provides redundancy as well as multiplying our ability to respond by mobilising and focussing our
intellectual and material resources, for instance when the SARS and Swine flu epidemics were countered.

As a result the functional security efforts of the public and private sector will increasingly focus on three
core tasks:

- Nourish: To maintain and nourish the vitality of the economic and technological flows. This is essentially
  the task of the TNC and key individual persons who are the drivers of the functional dimension. The
  task here is to ensure that their creativity and entrepreneurship are nourished and given a free reign.

- Stabilise: On the other hand the above vitality needs to be balanced by a degree of stability and long
  term sustainability. This is essentially the task of regulation designed to ensure that fundamental and
  long-term requirements are secured. This involves setting standards, policing and enforcing them. This
  is primarily the task of states, but acting in close concert with the TNC in order not to choke off the
  vitality of the system.

- Protect and optimise: Protecting the economic and technological flows themselves from the host of
  problems and dangers they face and optimising their flow. This is the task of Flow security, involving
  the very close cooperation of states with the TNC and the military with both a multitude of branches of
  the civilian government and the private sector.

The net result is likely to be that Flow Security will ascend to the top of the Globalisers security agenda by
2030. In Clausewitzian terms, this will be the centre of gravity of the globalising world

C. Transformed technological environment

Barring total collapse we will probably face a very deep transformation of our functional dimension in the
coming decades as Third Wave technologies mature and Fourth Wave technologies begin to emerge.
Currently the scientific and technological components of the functional dimension are evolving with
unparalleled speed and depth. Some of the potential consequences were outlined earlier, but the actual
outcome remains one of the more uncertain issues. Some of the key technologies are outlined below:

- Green technology: The broadening of our awareness of our economic and technological dependence
  upon the ecological dimension as well as our impact on it, coupled to the introduction of the full-
  ecocycle perspective (taking into account the full lifecycle of all products, from creation to recycling)
  has launched a technological emphasis upon sustainable interaction with the ecosystem. This includes
  first renewable exploitation of energy, food and other ecoservices and second minimising the human
  footprint.

- Nanotechnology: The miniaturisation of almost all mechanical functions allows the creation of
  increasingly small machines, from the size of insects downwards. Wireless communications in turn
  allows them to be networked, permitting individual specialisation which permits even further
  miniaturisation while retaining an ability to interact as a collective entity, or swarm.

- Artificial Intelligence: Processing power continues to multiply exponentially but is now coupled to
  increasingly sophisticated artificial decision making power. This will give birth to the first robots with
  broad cognitive awareness.

- Bioengineering: Endosystemic manipulation of biological entities - including humans

- Information optimisation: using pervasive sensors to optimise use of physical elements (IBM)
Their future development, and which new synergies they will give rise to, remain uncertain. What is certain however is that they in all likelihood will have profoundly altered our security environment by 2030.

3.4.3. 2030 - One critical uncertainty in the Functional Dimension

The functional dimension is dominated by one huge uncertainty. This is the fragility of the global economic and technological base. This gives rise to two broad future alternatives. The first is that current trends continue - that is to say that the globalising economy is able to withstand the occasional challenges and continues to flourish over the long term, and that scientific and technological advances continue. This benign scenario will impact positively on all three security dimensions. On the other hand there is a realistic possibility that the economic system may either enter a prolonged depression or undergo a sudden systemic crash. In this case the functional dimension could collapse, with extremely dire consequences for both the social and ecological dimensions.

A. Sustained or thriving functional flows

The good scenario, with a thriving Functional Dimension, has positive spinoff effects across the board. In the Social Dimension it offers: continued structural stability among global stakeholders (PMC, RTE); continued growth of global middle class, with greater structural stability in these societies; greater structural stability within the leading powers reducing pressures for external political conflict; and continued incentives among the leading powers for deepening non-zero sum cooperation.

In the Functional Dimension it offers more economic, technological and scientific power, which in turn gives us a greater ability to tackle global social and ecological problems.

In the Ecological Dimension it allows stakeholders to focus on solving global ecocrisis (attention and resources can be shifted from domestic concerns to dealing with ecological issues) and increases the political margins of manoeuvre for reaching multilateral agreements on critical issues. It also offers more powerful ecofriendly technological alternatives as well as reduced stresses for zero sum ecological competition leading to ecodamage.

B. Functional decline or collapse

If, on the other hand, the global economy enters a prolonged depression or crashes, then we may face a major historical regression, probably overshadowing the collapse of the liberalising euro-atlantic community in the late 19th century, when the shots in Sarajevo and the outbreak of World War One led to four of the most brutal and violent decades in Europe’s very long and violent history. The ingredients and consequences of such a functional crash could be grim.

In the Social Dimension they could include: mass unemployment and poverty including in the former elite societies; a collapse of the public services in the most advanced societies; escalating social problems and frustration and anger; the return of chauvinist national politics, extreme politicians and closed societies; the prevalence of zero-sum competition, authoritarian rule and violent confrontations. A functional collapse could also lead a significant drop in global population levels, if it led to increased pandemics, starvation and deaths from exposure to the elements. This could possibly have a beneficial effect on the ecological dimension if it led to a significantly reduced human footprint on the global ecosystem.

In the Functional Dimension it would lead to slower or stopped technological and scientific advances, as funding shrank and societies closed.

In the Ecological Dimension a functional decline or collapse would mean having less knowledge, tools and money to deal with the ecological crisis, having less green technologies that would reduce the human impact on the global ecosystem, at the same time as pressures to exploit remaining ecological assets would increase.

3.5. Critical Nordic Factors

Apart from the big global issues outlined here three factors will be of particular importance for nordic security. First Russia, as the main potential power political challenge directly affecting the nordic countries. Second, the ‘West’, whether it be the EU, NATO or the United States, as the main potential source of countervailing power that could provide support against a potentially difficult Russia. Third, the Arctic, as
an immediately neighboring area with a very high likelihood of deep changes and intense economic activity, with a potential for power political and military tensions.

3.5.1. Russia

As Jan Leijonhielm points out, forecasting Russia is fraught with uncertainty. However what is already clear today is that Russia is not a BRIC, or an RTE in the terminology of this study. The reason is that all the RTE’s are modernising and transforming, with rising economies, increasingly wealthy and empowered societies and evolving political systems. Russia is not. Russia today is a residual and largely stagnant power. Her economy remains based on primitive extraction industries which provide massive revenues but little economic development. Her society remains largely poor and helpless, with the exception of a small minority of very rich or moderately well-off in Moscow and St. Petersburg. Finally Russia has almost no soft power of any sort to speak of, in sharp contrast to China, India, Brazil and almost all other RTE’s.

Assuming there are no massive global shocks this study assumes that there will be a rough continuity in the following areas:

- Russian political culture will remain based on an authoritarian leadership with relatively strong domestic control, and a traditional Westphalian view of politics, in which the use of power and military force is seen as normal and where western liberal globalisation is seen as more of a threat than a model. There is thus a latent potential for political tensions with Russia’s neighbours.
- Russian threat perceptions will also remain largely Westphalian, prioritising great power politics and disregarding or exploiting transnational challenges. The underlying Russian fear of China will have increased significantly by 2030 as China’s superiority becomes overwhelming and the demographically empty Siberian and Arctic treasure houses of natural resources becomes both more sought-after and more exposed. The extent to which this inherent Russian-Chinese fault line leads to violent tensions is impossible to say as it depends on too many uncertain variables. At the same time Russia will remain deeply suspicious of the west, but less concerned since western Europe will be perceived as weaker than China.
- Russian economic culture will remain unchaned with the Russian economic base controlled by a small exploitative elite, and largely resting on primitive extraction industries with a relatively undeveloped infrastructure and limited grass roots enterprise. Russia will thus remain estranged from deep functional integration and will be part of the elite functional stakeholders. As a result Russia will also not share their non-zero sum interests in functional cooperation. Finally it means that Russian science and technology will remain relatively primitive.
- Russian society will also remain at a relatively primitive mid-industrial level, Living standards will remain poor with widespread hardship and relatively few chances of improving one’s lot. On the other hand Russian society will also remain patriotic, with a high degree of stoic stability despite adverse conditions.
- Russian military power continues to rest on her strategic nuclear arsenal. Even if this declines in size and quality it will remain one of the largest in the world. Russian conventional military capability will remain limited due to the primitive technological and social base. However it will be capable of limited operations in Russia’s immediate border areas, with the potential to invade weak neighbours and threaten severe damage to stronger neighbours. While Russia may well modernise a small core of her conventional forces this will not significantly affect their limited geographic range.
- Russian security policy continues to be skillful on its own terms, with maximum payoff from the military and economic resources at Russia’s disposal and an ability to divide and corrupt particularly western Europe.

Factors that will or might change are:

- Russia’s revenues may increase as a result of her vast storehouse of vital natural resources in a world of increasing scarcity. This will provide the Russian leadership with increased money and political leverage, but will not translate into a productive or high-tech economy. The Russian leadership will thus remain estranged, but not necessarily poor.
- Russia’s technological power will continue to decrease, as the lack of the rule of law chokes grass roots entrepreneurship, and creativity and science are restrained by authoritarian rule. Thus Russia will lag ever further behind functional globalisation.
- Russian demography will continue to shrink and age, while the share of non-ethnic Russians increases. The extent to which the Muslim population increases in the south, and the Chinese population increases in Siberia, will depend on how effectively the Russian leadership can control such trends.
How hard Russian power politics will be, and the extent to which she will resort to military force, will vary depending on several factors: the overall global political climate and the extent to which zero sum or non-zero sum politics prevail; the strength of the west, and the opportunities to use force that might arise along Russia’s European borders; the state of Russia's own strength, and her confidence of success, or conversely domestic pressures which could lead to efforts to generate external diversions; the intensity of the ecological crisis, either in the form of a global competition for scarce resources involving Russia, or else in the form of pressures to protect regional ecosystems that interfered with Russian interests.

All of this indicates that the potential for nordic regional crises involving Russia will grow. This is especially the case if a declining west would leave the three Baltic states more isolated. For Sweden this would not necessarily mean that the classical threat of invasion would resurface (here Finland with her long land border is in a far more exposed position). However it does increase the odds for nordic regional crises in which Russia wields her military power. This means that Sweden will need a military capability to support her regional interests, ranging from the independence of the Baltic states to the integrity of Swedish waters and shipping lanes in the Baltic Sea.

3.5.2. The ‘West’

By current trends the relative power of the ‘West’ will gradually decline, and by 2030 she will have to share power with the new global powers such as China, India, Brazil and so forth. The major uncertainty here is how much the ‘west’ will decline.

- The Good scenario involves marginal economic decline, based on the assumption that the global economy continues to function and that EU societies are able to adjust so as to remain competitive. Under these conditions the EU and NATO may thrive or at the very least remain cohesive actors.

- The Bad scenario involves deeper economic decline, leading to greater stresses within the EU, with the potential for a gradual regression as social stresses increased pressure against the eurozone and even fundamental EU pillars such as the free movement of goods and people. Under these circumstances the EU could begin to break up. NATO on the other hand could experience a revival as traditional Article 5. Concerns resurfaced in a harder power political world.

- The Ugly scenario involves a deep overall global economic decline, in which the ‘West’ is very hard hit. Large scale unemployment and collapsing state budgets lead to rising social problems and increasing social stresses, favouring the rise of extremist politics. Under these conditions the EU would fragment and states regress to mutually hostile national chauvinist enclaves.

3.5.3. The Arctic

Currently all trends indicate that economic activity in the Arctic will increase substantially by 2030. The melting ice cap will permit trans-Arctic shipping lanes, offering the shortest direct route between northeast Asia and the North Atlantic. At the same time rising scarcities of critical natural resources such as oil, gas, fish and minerals will increase the pressure to exploit the considerable reserves that the Arctic contains. This will be facilitated by the melting ice-caps combined with advances in our extraction technologies. All of this will in turn probably lead to a greater degradation of the Arctic biotopes.

The key uncertainty involving the Arctic is how tense the political relations between the actors in the area will be. In a benign scenario non-zero sum relations will prevail, with territorial claims resolves peacefully and with minimal disagreements over ecological regulation and protection. Less benign scenarios could emerge if zero sum politics prevail, in which case the Arctic could become dominated by geopolitical power politics and a greater military presence. In this case territorial disputes may flourish, as would disagreements over ecological protection measures contra sovereign rights, and perhaps tensions from the blame game following major industrial accidents.

In either case the Arctic will become a much more lively place, which will offer new opportunities but also place new demands on the nordic countries. Should Arctic political tensions rise it could also increase the military presence in the area, and the potential for military crises. In all of these cases Russia would be a major actor.
4. **SCENARIOS 2030**

This section seeks to identify the potential aggregate outcomes in 2030 of combinations of current trends. Overall the prospects are not good.

- The social dimension is predominantly negative with some positive trends.
- The functional dimension has largely positive trends, but these are highly vulnerable.
- The ecological dimension is deteriorating on all fronts and will have an increasingly significant adverse impact on the social and functional dimensions.

These trends, their interaction and their possible outcomes are described below.

4.1. **Overview Matrix**

The matrix below provides a broad overview of trends in the three dimensions paired to their alternative outcomes. The percentage figures are my personal estimate of their likelihood. The estimates of likelihood are obviously very subjective.

<table>
<thead>
<tr>
<th></th>
<th>Good</th>
<th>Bad</th>
<th>Ugly</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social</strong></td>
<td>20% non zero</td>
<td>50% soft zero sum</td>
<td>30% hard zero sum</td>
</tr>
<tr>
<td></td>
<td>10% struct stab</td>
<td>50% struct instab</td>
<td>40% struct collapse</td>
</tr>
<tr>
<td>Elite cooperation</td>
<td>Elite friction</td>
<td>40% struct collapse</td>
<td>Elite violence</td>
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<td></td>
<td>Moderat transl thr</td>
<td>Severe transl thr</td>
<td>Severe transl thr</td>
</tr>
<tr>
<td><strong>Functional</strong></td>
<td>40% survives</td>
<td>40% depression</td>
<td>20% collapse</td>
</tr>
<tr>
<td></td>
<td>Strong non zero glue</td>
<td>no non-zero glue</td>
<td>Miserable weak societies</td>
</tr>
<tr>
<td></td>
<td>Content middle classes</td>
<td>Angry societies</td>
<td>Miserable weak societies</td>
</tr>
<tr>
<td><strong>Ecological</strong></td>
<td>0% Recovery / Stabilis</td>
<td>50% Gradual descent</td>
<td>50% Rapid descent</td>
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<td></td>
<td>n.a.</td>
<td>Mod short, turbul</td>
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<td></td>
<td></td>
<td>Time to adjust</td>
<td>No time to adjust</td>
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<td>Time to avert tipping</td>
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<td></td>
<td></td>
<td>Moderate impact</td>
<td>Severe impact</td>
</tr>
</tbody>
</table>

4.2. **Key Scenarios**

The three generic scenarios below provide some alternative pictures of the global security environment in 2030 depending upon the alternative outcomes of current trends.
4.2.1. The Good

(diagram here - not available in this version)

In the good scenario our ecological base has continued to deteriorate, with increased but still moderate shortages and turbulence. The impact on both the functional and social dimension is noticeable, but neither is drastically affected. The rate of decline is also sufficiently slow to allow us to adjust to the ecological changes and seek to avert the most drastic tipping points.

In this scenario our functional base remains strong, providing a strong glue for non-zero sum politics among the elite, gradually improving structural stability among the rising powers and a larger global middle class. It also provides us with the scientific, technological and economic resources to address the ecological crisis and global social problems.

In the social dimension there is a shift towards greater elite multipolarity as actors and agendas diversify, accompanied by a marginal increase in hard power politics. However overall non-zero sum politics prevail among the elite, and there is a strong use of various multilateral fora. The principal decline in this scenario is the number and misery of the global poor and global extremely poor. They will almost inevitably increase, giving rise to greater transnational problems such as organised crime, revolutionary terrorism directed against globalisation and uncontrolled migration.

In this scenario our military requirements are strongly focussed on ecoprotection, flow protection and barriers against transnational problems, however we will still be engaged in selective global social engineering efforts.
4.2.2. The Bad

(diagram here - not available in this version)

In the bad scenario ecological decline is slightly more rapid and deeper, but with roughly the same impact as in the good scenario. The functional base has however declined slightly, with a slowed down global economy due to more severe price rises of critical raw materials, and stronger protectionist pressures due to greater structural instability among the leading economies. However the global economy is still function and is not in a state of depression.

In this scenario the social dimension has declined more noticeably and there is greater friction both within the elit and between the world's rich and poor. Among the elite states the functional glue for non-zero cooperation is weaker, at the same time as social stresses from structural instability have risen. Across the board within the elite states, both among the PMC and RTE, societies are angrier and more tense, exerting pressure for more radical politics. This will lead to stronger multipolarity and harder power politics. Multilateral politics will shift from universal and functional organisations towards hard power alliances and regional alliances. At the same time the number of the world's poor will have increased significantly, leading to even stronger transnational tensions.

In this scenario our military requirements remain focussed on ecoprotection and flow protection, but are now complemented with a greater need for classical hard power military missions. At the same time we will have almost abandoned global social engineering efforts and will be focussing almost entirely on barriers against the transnational problems pressing upon us from the world's poor.
4.2.3. The Ugly

(diagram here - not available in this version)

The ugly scenario is the most apocalyptic but is not entirely impossible. In this world the ecological crisis has gone faster and deeper than above and is now giving rise to strong scarcity and turbulence. This is impacting severely on the social dimension, generating ever strong pressures for zero sum competition for scarce resources. It is also creating greater structural instability in all the worlds societies, generating serious tensions within and between societies as well as major migration flows. Overall this scenario is characterised by a desperate and violent scramble for remaining natural resources with little regard for the long-term consequences.

In this scenario the functional dimension has declined noticeably and moved into a depression. Global trade is still functioning but it is increasingly constrained by protectionist and other barriers. The functional glue for non-zero politics is almost entirely gone, and increasingly impoverished economies are focussing more and more on domestic and military programmes. There are few resources left for addressing the global ecological and social crises.

Under these conditions the social dimension has regressed to relatively tense and violent westphalian conditions, with fragmented multipolarity and violent hard power politics among the world's leading states, and severe anarchy in the poor parts of the world. All of this is reinforced by an increasingly desperate scramble for scarce natural resources, in which short term imperatives have erased almost all long term thinking and efforts to address the roots of the ecological or social problems.

In this world we have entered a vicious negative spiral towards increasing poverty, violence and ecological crisis. Under these conditions military missions will focus ever more on classical hard power politics down to the regional level between neighbours, efforts to protect national natural resources or secure the natural resources of others. In this world the free flow of people and goods will also have declined, reducing the mobility of the transnational pressures. Instead we will have our own home grown problems from poverty, as we lock ourselves into smaller, mutually hostile national chauvinistic enclaves.
5. MILITARY REQUIREMENTS 2030

This section seeks to identify what specific missions the military will be required to fulfill by 2030. To do so it is necessary once again to re-examine basic concepts, such as the very purpose of military force.

5.1. What is the Military?

As General André Beaufre noted, war is the dialectic of opposing wills using violent force to resolve their difference. The military is the main instrument for applying such violent force. This can either be wielded apolitically - as a sort of blunt bulldozing where the opposition is physically removed - or politically, applying violent force or its threat as a means to influence another will. Finally the military can be used for things for which it is neither designed nor should do, but which governments impose on it when they have no alternative. These three functions are outlined below.

5.1.1. Essence - Applying high quality expert physical destruction

The unique core capability of the military is the expert application of physical violence. This is its specialty and no other agency wields this capability to inflict severe destruction. Other instruments for more indirect forms of violence and coercion exist - technological, economic, psychological - but they are indirect and do not yet generate as immediate and imminent fear and destructive effect as direct kinetic violence. This is currently changing as our dependency upon information systems increases and our vulnerability to functional failures grows. In coming decades it will be possible to inflict catastrophic damage on postindustrial societies by striking at their cyberinfrastructure. So the first point is that by 2030 the ability to manage cyberwarfare will be vital for our security. However this task will probably not be assigned to the military.

While there are no sharp dividing lines, the application of brute force can be divided into two broad categories. Firstly, unleashed kinetic violence. Here direct destruction is used to physically remove an opposing will from the board (eg the war against Hitler or shooting down a hijacked airliner to prevent a 9.11 scenario). Such high intensity combat can be placed on a scale between two poles. At the one end is Big Violence, consisting of large scale bulldozing operations, today mainly in the form of power projection (the 2003 war against Saddam Hussein). At the other end is Surgical Violence, consisting of focussed bulldozing for specialised tasks, also requiring a high level of destructive expertise, such as theatre ballistic missile defence, intercepting and shooting down a hijacked airliner or hunting, capturing or destroying terrorists. The EU lacks the big capability and has some surgical capability (fighter intercept, special operations forces). The full spectrum of high intensity combat, from big to surgical, will however likely remain necessary to 2030.

The second major application of violence is leashed kinetic violence. This also entails the active use of violence, but in this case as a means to influence the opposing will rather than removing it. This is Clausewitzian war as the extension of politics, in which the violence is – ideally - tailored to the psychological objective and makeup of the opposing will. An intimate understanding of the opposing will - and of one’s own will - is thus crucial to this sort of operations. During the industrial age the psychological centre of gravity became the elite states and their leaders, and we had some three hundred years to learn to understand their nature.

Today this is changing as a result of four trends. Firstly, because the world’s elite states are increasingly integrated into a peaceful and wealthy community where the benefits of cooperation and integration vastly outweigh those of violent conflict. Within this postwestphalian community relations are seen in non-zero sum terms, where all can benefit. This benign condition is however entirely dependent upon the global economy functioning. If it crashes it would probably also bring down this soft political order. Rising unemployment and reduced state budgets would lead to poorer and more frustrated societies. This would in turn breed protectionism, national chauvinism and a return to poorer, mutually hostile, closed societies with a zero sum view of the world. Securing the global economy is thus of fundamental and primary importance for our security - which is why the current economic crisis is so deeply frightening.

Secondly, the political fault lines generating dominant violent conflict have shifted from the westphalian paradigm of competition and conflict amongst the elite states towards the globalised paradigm of tensions between unequal global socioeconomic classes of society. The drivers of intersocietal violence have shifted from yesterday’s horistontal peer competition towards vertical asymmetric tensions. Technology has shrunk the world into a global village, but it is a village on the verge of revolution as a result of the
massive tensions between rich and poor strata.

Thirdly, new non-state actors are becoming increasingly powerful and significant. First and foremost are the transnational corporations. They are the drivers of the globalising economy, operating far beyond the controlling confines of any single state and with growing economic and technological and scientific power. In this sphere the state is increasingly reduced to a regulatory role. However the elite states and the transnational corporations have a close symbiotic relationship, as both are equally dependent upon the globalised economy and the liberal political order on which it rests. Another emerging new non-state actor are the alienated transnationals, such as transnational terrorism or organised crime. Their power is increasing partly due to the diffusion of technology down from the state, and partly due to the increasing ease with with people, goods and ideas can flow across geographic distance and state boundaries. Finally civil society and NGO’s are gaining more and more power, partly due to their growing legitimacy and ability to influence public opinion in liberal societies, and partly because of their rising expertise in their selected fields. Power is diffusing away from the state.

Finally, the conventional military power of todays global elite states, or rather that of their champion the USA, is so overwhelming that it is suicide for any of the world’s weaker alienated states to challenge them with conventional military means in a traditional game between nations (Serbia 1999, Iraq 2003). This does not preclude violent conflict between states, but it means that the weaker states need to employ new asymmetric means if they are to challenge the postmodern community. Here it is however important to keep in mind that this depends upon the US - and perhaps one day EU - overwhelming conventional superiority. If this were to weaken, then the option of conventional military force would once again become available to the alienated states.

As a result Clausewitzian military violence is shifting to two new arenas. It is here that we are currently relearning how to apply leashed violence. Firstly, Boots on the Ground (BOG) operations, providing security for conflict resolution or state building, from consensual peacekeeping to enforcement. Such peace support operations differ from the direct unleashed use of violence since they are a support act for a broader social engineering campaign. Here military force may be essential but is nevertheless strictly subordinated to the overall societal construction effort and its psychological demands. This is the predominant focus of much of the EU’s current military agenda, and the ESDP and EU Battle Groups are products of this requirement. Here we face two major challenges. The first is to learn the psychological subtleties of this game, which differ vastly from those of westphalian Great Game between peer states. The second is our own will - or lack of it - to engage in this sort of lengthy, painful and costly campaign. We will almost certainly find the soldiers with the will to do this, but whether our soft postmodern societies and their leaders are willing to make the necessary and drawn out sacrifices is another matter.

The second form of leashed violence is different, and consists of Policing Missions. Here the military is used for global and regional law enforcement, barrier operations and rescue and evacuation. Typical examples are enforcing ecological norms (fisheries protection), barrier operations against smuggling and illegal migration (the Rio Grande or Mediterranean efforts) and rescue and evacuation of citizens abroad, both en masse (West Africa, Lebanon) and individually (Africa, Somalia). All three missions are increasingly important for the EU, from the Barents (fisheries) to the Mediterranean (migration) to the waters off Somalia (piracy). By 2030 their importance is likely to grow considerably. Firstly because the global ecological crisis will deepen, secondly because tensions between global rich and poor will grow, and thirdly because more of the wealthy worlds citizens will spread over the world, subject to various forms of danger and catastrophe and expecting to be rescued by their home governments or by specialists from the private sector. Whether this is the task of military, paramilitary or civilian organisations is a moot point - the demands of these robust policing tasks are the same. However since their global range will increase the military with its larger resources will probably become a major player.

5.1.2. Spinoff - The ability to influence

The ability of the military to inflict unpleasant violence provides a key spinoff effect which traditionally gave the military tool its main day to day utility. This is its ability to support diplomacy, again through the ability to influence another will, but now as part of foreign policy. In this case the effort is directed towards a clear ‘opposing will’. The distinction between military Foreign Policy Support operations and BOG operations is that the first targets the will of a centralised hierarchical actor, whereas the latter strives to enlist the support of an amorphous society and influence a spectrum of often nebulous and shifting actors. It is the distinction, in General Sir Rupert Smith’s words, between inter-state industrial war and wars among the people - and crucially for the people. In the first one seeks to oblige the other government to sign a contract, in the second one must establish a social contract with the grassroots.
This political use of the military to influence a clearly distinguishable opponent is more cost-effective than the blunt effort to physically remove him. However it demands psychological skill, and is easily derailed by the emotional tensions inherent in conflict and/or the technical and tactical demands of winning a violent conflict. Today however the number of states towards which this form of westphalian military influence has been directed is shrinking, and only a handful currently constitute a direct challenge (North Korea) or potential challenge (Iran, perhaps Russia). However this could change rapidly should the global economy crash. In that case we could revert to a violently competitive multipolar world of poor and mutually hostile powers.

The application of military influence for foreign policy support also takes two distinct forms. The first is the most obvious, using the stick of potential or actual violence to frighten another will into complying with one’s wishes, either through deterrence or coercion. North Korea is a case in point, but the same deterrence and coercion principles can apply towards all alienated regimes if conditions deteriorate. The second is less obvious but very common, and consists of using the carrot of military services as a means to attract interest and influence. In this case military assets are used as enticements, attracting favourable attention and increasing influence with partners. Examples include offering troops or assistance for international operations, wielding technological know-how providing access to major industrial or scientific cooperation, offering military assistance and expertise, intelligence, exercise areas and so forth. These assets offer a seat and a voice at the round tables in Brussels (NATO and the EU) and/or access to the imperial throne (the White House). This is also a major driving force behind states engagement in the ESDP and US or NATO led operations.

5.1.3. Default - the improvised application of military assets, faute de mieux

The third main use of the military is to do things for which it was never designed and should not do, but which society requires of it when it has no other resources to do the job. Most of these tasks fall under the heading of societal support during and after functional disasters. Examples include providing logistical services when normal peacetime infrastructures break down, reinforcing civilian authorities and police under times of heightened terrorist alert, enforcing law and security in the aftermath of major disasters, replacing civilian services when they go on strike (garbagemen in Naples, firemen in Liverpool or air-traffic controllers in the US), cleaning up beaches after oil spills and so forth. These are all things that the military is not designed to do and should not do, but for which society often has no alternative when major disaster strikes.

Most of these scenarios would be best dealt with by civilian organisations. However they are lacking and efforts to create them are slow. In their absence the military will need to retain a readiness for improvised societal support missions. With the increasing urbanisation of society and its growing vulnerability and dependence on central authorities this need will increase in the coming decade.

5.2. Military Missions 2030

Two factors will largely shape the military mission profile in 2030. One is the inherent transformation of the military instrument itself, resulting from social and technological changes. The second is the tasks which it will be called upon to perform. These are outlined below.

5.2.1. Transformation of the Military Instrument

No outline of the military environment in 2030 would be complete unless we include the transformation of the building blocks of which the military instrument consists. These are threefold: first the will of the leadership, soldiers and society; second the skill with which they can apply that will; and third the tools they have with which to implement their decisions. Two of these factors are changing deeply and will affect the military profile of countries such as Sweden in 2030.

Firstly the will of a significant portion of the PMC leaders and society is declining. This applies particularly to the western European welfare states. They have become, in Robert Inglehart’s terms, a soft postmodern society. As Christopher Coker has emphasised, such societies are averse to suffering and sacrifice, both for themselves but also towards inflicting it on others. If this trend continues it is questionable whether the EU will retain the will to maintain and use high intensity military violence by 2030. And without that there is not much left to the military. A proviso here however is that will is contextual. A perception of an acute threat among EU leaders and societies can resuscitate a stronger will to act. This would however only arise after the problem has become a ‘clear and present danger’, which is
not a healthy strategy.

The second major change is technology. In the coming decades three breakthrough technologies are likely to transform both our environment and our military tools. Advances in nanotechnology, data processing and sensor systems, and especially their fusion, will have at least two major consequences. Firstly, a vastly increased global sensor grid. The world around us, and we ourselves, will increasingly become seeded with vast amounts of diffuse and networked miniature sensors. Each individual is becoming embedded with sensors (currently loose sensors such as credit cards and mobile phones but soon evolving to embedded semi-intelligent sensors such as biotagging, health chips and more) capable of monitoring and sending out signals about the current status (location, activity, biological state plus any number of further data) to meshed information networks. This sensor tagging applies not only to individuals but to an increasing share of all elements in our critical functional flows (containers, aircraft, ships, trucks, individual parcels, etc.) On top of this, or rather around it, is an increasingly sensor rich environment (currently surveillance cameras and various barrier checkpoints but likely to expand exponentially once microsensor robots become operational). By 2030 we will probably also be able to seed areas of the world with limited embedded sensors with swarms of networked micro-sensors providing very comprehensive regional surveillance meshes. Finally we are shifting to increasingly sensor-prone habits and dependencies (email and all cyberspace transactions and activities).

By 2030 advanced societies will swim in a sea of sensors and it will be increasingly difficult for individuals to unplug themselves from this information grid or avoid its pervasive observation. This is now emerging in the most advanced societies and will gradually spread across the world. In addition the development of microsensor swarms will provide the capability to seed uncovered parts of the world with sensors short notice. Under these conditions the sphere of individual privacy will shrink enormously. It will raise enormous ethical and political challenges. It also means that decisive power will rest with those who control the sensor grid and the resulting datamaps.

The second major consequence of the nano-data-sensor fusion is that the tools of military force will be transformed, becoming smaller, more autonomous, more intelligent and very closely integrated. Today’s individual big centralised manned weapons systems are likely to be increasingly replaced by dispersed miniaturised swarms of robots that will also have lethal capabilities. Clouds of minute subcomponent robots, each with different specific qualities (multiple forms of sensors, communications, processing and analysis, multiple forms of damaging agents) and integrated into networks will become capable of acting coherently and of morphing into various configurations to perform a wide variety of tasks. This lies beyond 2030, but the trend will be there, with more and more unmanned vehicles, robotics and miniaturisation. It may also offer us a technological means to compensate for declining will. We will enter the fifth dimension of warfare - that is to say the miniaturisation of weapons systems.

The consequences of these two trends are firstly that the focus of physical power is shifting towards the cybersphere. Secondly, that kinetic destruction will increasingly be replaced by what we may call corrosive destruction, capable of inflicting far more severe but also more controlled and precise damage than kinetic destruction.

5.2.2. Mission Overview

By 2030 our security challenges will be more diverse and more severe. They will require military instruments capable of supporting six critical tasks. They are, in rough order of importance:

■ Flow security - protecting global technological and economic flows. This will become our number one priority since it is the primary underpinning for the survival of our societies and hence the emerging global political order. At the same time our vulnerability to breaks in these flows will increase, even though new design concepts and technologies will introduce greater resilience. Flow security requires the very close interaction between the business, government and scientific communities. For the military it calls for a wide range of capabilities, from regional power protection to keeping sea lanes open to highly technical intervention capabilities. It also implies a very close integration of military capability with the technological and business community.

■ Ecological protection - the global policing and enforcement of ecological norms. As the global ecological crisis grows its impact will become ever more acute, raising ecological security to the top of our political agenda. This will multiply the intensity and scale of our efforts to protect the environment both at home but especially globally. This will rest on multilateral or unilateral decisions on how best to protect the environment, but these will require a host of regional and global policing and enforcement
■ **Hard power politics** - the traditional Clausewitzian quest for influence, in this case over alienated state regimes. Some alienated regimes will still exist in 2030 - the key uncertainty here being the Kremlin. If so we will need to retain a capability to meet their deliberate challenges to our vision of the world order. This will continue to require hard military power, since they will resort to this if they believe they can get away with it. Hence maintaining overwhelming conventional superiority is essential for the globalising community. However this will also require an increased focus on asymmetrical forms of destruction, since the alienated regimes will seek to counter our conventional superiority - as long as they perceive we have it - through other means. Currently the focus of the alienated regimes is on maintaining or acquiring weapons of mass destruction as a means to deter the globalising community. By 2030 however the critical importance of the cybersphere - and the opportunities to inflict massive damage through it - will have made this into the principal technological battlefield for asymmetrical dominance. The challenge from alienated regimes is the major security concern for the eastern members of the EU, and if the ESDP is unable to protect them against this then they will turn to NATO or directly to the US.

■ **Barrier operations** - shielding the global rich from the tensions and problems of the poor. As the ratio of the world population living in misery and frustration will remain massive the tensions and spillover between their world and that of the rich will continue to grow. As we are unlikely to have solved this problem at its root by 2030 - ie by curing dysfunctional societies - we will need to strengthen our barriers. It is a morally distasteful, losing strategy, but will be unavoidable if we cannot solve the problems are their root. It could be further reinforced if we reduce our global engagement to solve the problems at source (see point 4. below.)

■ **Social engineering** - stabilisation for conflict resolution and state building operations. This adresses the core of the global social problem but the lessons of our last decades indicate that the difficulty vastly exceeds our capabilities. Both the UN Millennium Goals and our state-building efforts are floundering, at the same time as our will and resources are becoming overstretched. Hence the priority and ambition of this category of missions may well have been scaled back by 2030. That would be serious, since it means the problem itself will grow, increasing global class tensions and their spillover in various forms, and increasing the need for barrier operations.

■ **Societal support** - default operations to assist society cope with various functional disasters. As post industrial becomes more dependent upon a complex functional base, and as urban society becomes less self-reliant, the potential for societal disasters will increase. This will be reduced over time as we introduce technologies, designs and social structures that increase our functional resilience. However during the transitional period, which will last well past 2030, we will be increasingly vulnerable to major disasters. In many cases the military will have the only improvised emergency resources available. This will call for an ability to improvise rapidly, to adapt military assets for rapid assistance for societal assistance, as well as an ability to operate smoothly together with civilian authorities and within the own society.

This is a wide and daunting range of missions and capabilities but it reflects the range of security challenges in 2030. It implies not only new orientation, organisation and capabilities, but also a growing need to interact with an increasingly diverse spectrum of non-military actors. This includes firstly within the own state, between the military and other government agencies. Secondly with other states, since no single state will be capable of managing the spectrum and scale of challenges unilaterally. Thirdly - and perhaps most important - beyond the state, with the transnational business community, scientific community, NGO’s and civil society.

The historical record indicates that the evolution of the EU’s military capability will remain slow, cumbersome and reactive, at least until 2030. Sweden on the other hand is different. First, as the last two decades illustrates, she is capable of launching drastic defence reforms (perhaps too drastic). Second, Sweden is an engineering society with the development and implementation of high-technology as one of her absolutely strongest qualities. In a social and military environment increasingly dominated by high-tech breakthrough technology (nano-sensor-data fusion), that furthermore lies outside the straight jackets of Sweden’s cumbersome state institutions, Sweden might be able to make real leaps ahead. However in the interim we will still need a mix of more classical military capabilities.
5.3. Military Mission by Dimension

The actual mission priority will depend upon how the deep trends pan out in 2030. This section gives a rough outline of the military implications of changes in each of the three basic dimensions of security.

5.3.1. Military Requirements in the Social Dimension

In the social dimension two generic types of military mission can be envisaged by 2030, though each of them can take several forms.

A. Upstairs - hard power politics?

From a global multipolar perspective the need for a traditional military capability as an instrument of hard power politics will depend upon how far global politics drift towards zero-sum competition. If global politics again lean towards zero-sum competition then the traditional Clausewitzian use of force is likely to return as well, though technological change will ensure that it will take very different forms. Scenarios here can include:

- Global multipolar tensions between major actors such as China, Japan, India, Russia, Brazil, the United States and - perhaps - the EU or some leading states within the EU.
- Regional tensions between larger states and their smaller neighbours, for instance Russia in the Baltic.
- In the worst case tensions between small regional neighbours, competing for natural resources.

The core questions for Sweden in such scenarios would be: First, will she be targeted by antagonistic states? Second, how powerful will they be? Third, can Sweden manage the threat by herself or will she need outside support? Four, can Sweden find outside support if needed? Five, will vital interests or alliance commitments (EU, NATO or other memberships) require Sweden to assist others militarily?

B. Upstairs-downstairs - barrier efforts?

From a global rich-poor perspective it appears almost certain the current PMC agenda of active engagement in the poor parts of the world will have been significantly diminished due to high-cost combined with lack of results. However the transnational pressures from the poor parts of the world will no doubt have increased since conditions inside these societies are unlikely to have improved. In this case we may expect the rich parts of the world to withdraw to a barrier strategy, seeking to erect barriers to keep out the spillover of misery from the global poor.

These can take various forms depending on the challenge:

- Barriers against illegal immigration either at sea or on land (eg Rio Grande, Mediterranean)
- Barriers against organised crime and its products
- Barriers against transnational terrorist organisations

If the EU and/or NATO still exist we can envisage multinational efforts. If they have been reduced or dissolved then we will need national, or perhaps nordic efforts.

5.3.2. Military Requirements in the Functional Dimension

In the functional dimension we can envisage one high priority mission and two areas of uncertainty but which will have a very high impact.

A. Flow Security

Barring systemic collapse the primary importance of the global functional flows - the health of the globalising economy and its technological base - is likely to be increasingly recognised by all stakeholders of globalisation. The role of global functional flows as the foundation of the entire post-westphalian political order will also become ever more important. If they crash everything else in the social dimension will crash. The net result will be that for the stakeholders Flow Security - protecting and optimising the globalised economy and the technological infrastructure on which it rests - will become an overshadowing
existential interest. All else - except the global ecocrisis - will be second-order issues.

At least five factors make this effort complex:

- **global scale**: flows and nodes across the globe are intimately interconnected.
- **rapid**: shocks can cascade, mutate and spread very rapidly across the net.
- **multidimensional**: involves all three dimensions (social, functional and ecological); multiple channels (sea, air, land, radio waves, cyber); multiple products (people, goods, information, finances); and multiple nodes (urban complexes, extraction, refining, manufacturing, transport, distribution, etc.).
- **multiactor**: as a result, it requires close interaction between state and a vast complex of different actors in the private sector (which have more understanding and power over their respective areas of expertise and are able to react faster and more efficiently); multilateral institutions (mandates, legitimacy, expertise and coordination) and increasingly civil society (legitimacy and sector expertise).
- **synergies**: complex interactions, synergies and mutations (e.g., pandemic).

These factors in turn mean that we will have to rethink security to adapt to this operational level and develop new doctrines, organisations, and instruments. More important perhaps will be the ability of diverse core competences to be coupled rapidly and flexibly.

As noted, flow security is highly complex, and much of the task of optimising and safeguarding global functional flows will belong to the civilian and private sectors. However, the military may retain some fundamental missions, as well as a host of more narrow tasks, some of which might require close cooperation with the civilian or private sectors:

- One existing primary flow mission, assigned to the USN, is to protect the SLOC on which the global oil flow depends. A similar mission, but geographically more narrowly defined, is operation Atalanta, to protect shipping routes in the Gulf of Aden and, increasingly, the Northwestern Indian Ocean.
- One existing potential mission is for power projection to stabilise critical regions for the global flow system, for instance the Middle East (oil) or maritime choke points or other vital nodes.
- Other missions could involve surgical military support in specific situations or for longer term but narrow duties. This could include neutralising antagonistic threats (hostile state actors, transnational terrorists or organised crime) or guarding, or helping to guard, strategic nodes in the flow system.

**B. Uncertainty - Will flow security prevail?**

We cannot forecast which of the two functional scenarios will prevail. If we are able to maintain business as usual then the benign scenario may prevail, offering a tremendous boost to both the social and ecological dimensions. However, as noted the functional dimension is vulnerable and operates in a highly volatile and unpredictable environment. Thus, the possibility of both gradual decline but also sudden debilitating shocks and crashes is high. In this case, the impact on the social and ecological dimensions will be huge and, as noted above, we will enter an entirely different political ball game in which military force will play a far larger role than today.

**C. Uncertainty - What will the new technological environment look like?**

Finally, we will under all circumstances probably move into a very different technological environment. The technical playing field will gradually shift from armoured kinetic capabilities to cyberclouds and nanoswarms coupled to the ability to control and manage enormous masses of sensor data in real time and on a global scale. This results from at least three closely interconnected trends:

First, the spread of an increasingly pervasive global network of sensors. This results from the fusion of nanotechnology with sensors and data management. It means that in the next decades we will inhabit with massive amounts of surveillance and data management. Among the elite societies almost all objects will contain embedded sensors and signals devices, while the less advanced parts of the world can be rapidly seeded with swarms of mobile sensors as the need arises. It will become increasingly difficult for individuals to decouple from this sensor grid. On the positive side it means that we will be able to optimise
the use of our resources - including human capital - in hitherto unheard of ways (IBM). On the negative side it means that the private sphere will shrink enormously. Control of this cybersphere will also become an increasingly central form of power.

Second, and coupled to the above, the increasingly sophisticated use and optimisation of massive oceans of data. IBM, Siemens, Google, Facebook: Smart cities, smart everything.

Third, swarm technology. Nanotechnology combined with artificial intelligence combined with mass data management. Miniature swarms of networked robots acting in concert. (Jack Vance +)

Each of these will have a massive impact on military technology and on how we fight wars. Their development is so rapid that they could have radically altered the battlefield by 2030. Currently difficult to predict, this is an area which needs to be watched closely.

5.3.3. Military Requirements in the Ecological Dimension

Ecosecurity will almost certainly rise right to the top of the security agenda in the coming decade. This will be driven by two connected trends. First, the increasing difficulties facing both states and other leading global actors (primarily the TNC) from ecological scarcity and turbulence. Second the significant increase in the impact of the ecological crisis directly on the citizens of not only the poor but also the rich global societies. Direct impacts on the social dimension includes a host of debilitating regional trends such as spreading disease vectors, extreme weather phenomena (storms, flooding or heat), increasing pervasive heat (discomfort and deaths, desertification and drought, massive forest fires affecting urbanised communities) and so forth. Consequences for the functional dimension include rising food prices and food scarcity affecting societies, rising commodity prices affecting the global economy, increased disruption of technological networks and so forth.

As the pain level rises for key actors and the inhabitants and voters of the wealthy societies it will generate massive domestic and functional pressure for action to mitigate the ecological pain. This will place ecosecurity, and all related aspects, right at the top of the political agenda. This can have two consequences.

First, it will become a leading shaper of global and domestic politics. The way it shapes them will depend on if non-zero sum or zero sum politics prevail, but domestic pressure will be such that no politician in the PMC and the RTE, and no TNC, will be able to avoid addressing the ecological agenda.

Second, the ecocrisis will in all likelihood generate a major new fault line between those states attempting to maintain the principle of the inviolability of their sovereign rights and those promoting the primacy of universal values. But now the fault line between sovereign and universal values will not involve universal humanitarian values (Human Security) but planetary ecological values. Since these will be driven by a far more tangible and immediate impact on societies they will generate a far stronger collision than the relatively abstract and remote human rights agenda has done so far.

Military missions for ecosecurity can include a range of tasks:

- Surveillance - of ecological conditions and of other actors ecological behaviour
- Policing - ensuring that national or international ecological norms are being met
- Disaster Relief - assisting other authorities deal with ecological disasters or with societal recovery
- Enforcement - ensuring that national or international rules and regulations are respected, using force if necessary
- Protecting - national or allied ecological resources from potential attempts by others to exploit them by force
- Global Power Projection - to protect critical global ecological services that are endangered by state or other actors
- Global Power Projection - to gain access to critical ecological resources

These can either be primary military missions (at the high end of the scale) or support operations for other actors (at the lower end of the scale).
6. CONCLUSION

Politically, we see two great global forces straining against each other today. On the one hand the pressures towards violent divergence - the parochial and competing conditions of the westphalian world, rooted in hardship, fostering brute struggles for power and narrowing the options towards zero-sum competition. On the other hand the forces of peaceful integration - the integrating mesh of globalisation, offering material comfort, fostering shared ventures and broadening the opportunities for non-zero sum cooperation.

Ultimately the greatest danger we face is if the underlying process of globalisation were to stagnate or collapse. Technological and economic globalisation, and the mutually binding opportunities for wealth and stability that they offer, is the glue that holds the peaceful integration of the globalising stakeholders together. If this were to collapse, then we would see a return to the islands of nationalism of the westphalian system.

This study indicates that the strains on the non-zero sum world will be considerable. They include an inevitable deterioration of our ecological base, and the highly likely increase in global structural instability with attendant increased transnational problems, as well as a highly likely shift towards a more fragmented multipolar global elite. What is difficult to forecast is the extent to which hard power politics will dominate among the elite. The one factor which is potentially positive up to 2030 is our functional dimension. While it is vulnerable and may suffer either economic depression or collapse, it also has strong prospects for remaining strong. If so it will help serve as a glue for non-zero politics as well as offering us the tools we need to address the rising ecological and social problems.

These are the core issues that we must focus on. As long as the forces of globalisation keep flowing there is a high likelihood that the social dimension will find a new sufficiently stable equilibrium to permit at least part of the global population to live in comfort and vitality, and, as important, under conditions that allow us to move towards alleviating the deep ecological and social challenges that remain. Since the most powerful players will depend on their power on globalisation, and this in turn will bind them to the globalisation mesh and each other.

The next UN will probably not be constructed around the social and political management of the world, but on addressing the increasingly dire ecological crisis and on fostering economic and technological globalisation. The members of such a future Security Council will be not only the leading states, but also the leading technological and economic actors - ie the transnational corporations that drive technological and economic growth.

If we fail at this, then we will experience a phase of historical regression, with today's peaceful wealthy societies sinking back to poverty, giving rise to national chauvinism and mutually hostile states and violent zero-sum competition. Since the technological underpinnings driving globalisation are unlikely to disappear we will probably arise from the ashes again, as we did from the ruins of World War Two, but the interim stage could be brutal and miserable. Especially in a shrinking world with ever greater ecological scarcity.
APPENDIX 1. Should we ‘securitise’, can we forecast and what are the alternatives?

A. Should we ‘securitise’ and can we forecast?

Two arguments are raised against trying to identify and forecast new security challenges. Both make serious points, but both are misguided when taken to extremes.

The normative critique - we should not ‘securitise’ issues

The first critique is directed against the broad, or holistic, view of security, and can be called the securitisation argument. This emphasises the need to minimise conflicts, arguing that the broad security perspective is bad per se as it reflects a paranoid worldview that generates tensions and conflicts that could be avoided with a more positive mindset. First by influencing our general attitude, framing issues in a context of danger and threat that creates confrontations where none need be. Second, by making resolution more difficult, by dramatising and politicising issues which could be better solved if they were kept on a more practical functional level. Third, by militarising issues, casting them in a confrontational and threatening mould which predisposes us towards forceful military responses.

This critique has a point, as far as it goes. Paranoia is generally misguided and counterproductive, issues should indeed be approached in as positive a light as possible and it is more expedient to seek cooperative solutions than to collide. The problem arises when it is carried to extremes. In security, as in health, denial is seldom wise. Denying any and all potential threats becomes naïve and ignorant, in the worst case allowing nascent risks (be it a tumour or an Hitler) to grow into severe threats. As C.S. Lewis notes in The Screwtape Letters, "There are two equal and opposite errors into which our race can fall about devils. One is to disbelieve in their existence. The other is to believe, and to feel an excessive and unheal thy interest in them." Resolving this conundrum is ultimately a question of equilibrium, finding a balance between the extremes of paranoia and naivety - to avoid generating needless conflict while remaining alert to those real risks that do exist. This is particularly challenging when one is on the threshold of a very new security environment with a host of unknowns such as we are now.

The methodological critique - we cannot forecast with any certainty

The second critique is directed at the effort of forecasting itself, and could be called the sceptical argument. This focusses on analytical method, noting that forecasting even simple social phenomena is difficult and forecasting vast multidimensional global trends impossible. For support these critics can point to any number of past forecasts that subsequently proved absurdly wrong.

This critique is justified but only up to a point. It would be foolhardy indeed to rely blindly on any long term global forecasts. However like the securitisation argument it goes overboard when taken to extremes. The problem with rejecting all attempts to forecast the future is that there is a future out there which we will encounter, and our behaviour now will affect what sort of an encounter that will be. There is thus a need to peer into the haze as well as at the potential consequences of our current actions. While the future is certainly foggy and shifting, this is no reason to close our eyes. On the contrary, a highly dynamic and challenging environment calls for even greater vigilance.

Why it must be done nevertheless - the arguments for holistic security forecasting

The securitisation critique is limited by three counterarguments, of which the last two are specifically linked to our current circumstances of deep global transformation:

- First because potential threats are out there and it would be extraordinarily unwise to disregard this simply because they have not yet grown into clear and present dangers. While we should not become paranoid we must also avoid the other extreme of denial, complacency and ignorance.
- Second because current conditions require a broader holistic security perspective. As we leave the industrial age the diversity of potentially serious threats has multiplied at the same time as our understanding of most of them remains limited. While only a fraction of these risks will erupt into existential threats we do not know which or how many will do so. We thus must adopt a broad holistic security perspective if we are to avoid being blindsided.
Third because the new security challenges interact far more dynamically and dramatically than we are used to. Threats now ricochet, cascade, multiply and mutate with great speed. The result is a bewilderingly complex, volatile and unpredictable security environment. We thus need to adopt not only a broader threat perception, but also a synergistic understanding of how apparently distinct phenomena can interact.

These two new factors - the variety and interaction of potential threats - calls for an epistemological revolution in the way we think about security. We need to both rethink the concept of security itself and how we analyse and manage it. We are entering new territory in which yesterday’s paradigms, parameters and methods are only partially relevant. Yesterday’s political science methodology - the quest for a pseudo-scientific certainty based on reductionism and linear causality - can no longer adress the most important security challenges that we face. One key element in this epistemological revolution will almost certainly be a shift towards consilient analysis, resting on the holistic and synergistic approaches outlined above. While we need to bear in mind the warning of the ‘securitisation’ critique, we should not let it constrain our need for a new epistemological approach.

The same applies to the need for forecasting. While it would be foolhardy to believe that we can forecast with any certainty this does not mean that we should abandon the effort altogether. On the contrary, under today’s conditions we need to do so more than ever. There are at least six good reasons for this:

First, because security forecasting is possible within limits. Even if we do not have 20/20 vision, we can identify some of the critical issues, the contours of some current deep trends affecting them and some of the alternative challenges they may lead to. We must not delude ourselves that we can see all issues, trends and outcomes with any certainty, but simply being aware of some of the critical areas, trends and challenges is better than not being aware of them at all.

Second, because we have a greater responsibility than ever before to do so. As human scientific and technological power grows, our impact on the planet and on humanity is ever greater and deeper. As a result we must assume greater responsibility for the consequences of our actions. This in turn requires a greater awareness of the long term impact of what we are doing or propose to do, which in turn requires forecasting. We can no longer afford to proceed without a long-term Planetary Grand Strategy, and this must be based on some estimate of the long-term future environment and consequences of our policies, even if these estimates are imperfect.

Third because any major investment - be it political or financial - must be justified by an estimate of future costs and benefits. While we must be honest about the limits of our forecasts they nevertheless need to be done. Otherwise we risk investing a little in everything and getting nothing, or else investing in an entirely wrong track while missing critical requirements.

Fourth, because we must set priorities. Both allocating scarce resources and preparing and organising ourselves to meet our needs and challenges depend on setting priorities which in turn rest upon estimates of future challenges and needs.

Fifth, on a more mundane level, because in the grass-roots rough and tumble of the political and bureaucratic battle for influence and funding those who cannot justify the purpose of their requirements will lose their budgets. At the same time any investment that is justified purely on immediate needs, without taking into account long term requirements and consequences, would be fatally misplaced. We can no longer focus entirely on the Clear and Present Danger. We must also keep an eye on the Fuzzy and Possible Risks.

Last, but not least, the effort to peer into the future has a value in itself. It sharpens our analysis by making us more aware, sensitive and attuned to our environment. Even if we cannot forecast with certainty, the effort to do so broadens our perceptions and develops a more coherent and discriminating understanding.

Thus we must not let the perfect become the enemy of the sufficient. Even a misty outline of a future in flux is better than nothing at all - as long as we keep in mind that our forecasts can never be certain nor comprehensive. Nor may we allow the pseudo-scientific obsessions of the traditional political science critics to block us from seeking alternative analytical approaches which may be ‘fuzzier’ but may also more

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relevant to today's conditions. Sticking to yesterday's linear reductionist methodology in our new conditions is trying to drive by looking through a microscope.

When that is said neither point made by both critiques should be overlooked. Don't overdo the paranoia, don't have too much confidence in forecasts. But nevertheless, in today's world more than ever before, we must have a broad security perspective and we must strive to look ahead.

B. Complements to forecasting - agility and resilience

Nevertheless, in today's volatile and unpredictable security environment we can no longer expect to foresee all critical threats. Yesterday's security management paradigm - planning and preparing for what we can see - is no longer sufficient. It is becoming harder to identify all risks and much harder to estimate their severity and likelihood and thus set priorities. We thus need to complement planning-based security preparations with other approaches.

Two such complements exist: flexibility and resilience. If you cannot see what is coming you may compensate either by being extremely agile - dodging blows quickly - or by being resilient - rapidly recovering from those blows that get through, or both. The shorter one's forward vision, the more important these two complementary strategies become. And today our forward vision is very limited.

Complementing our current planning-based approach to security with agility and resilience is not easy. Resilience is partly a question of design - how we engineer our technological and economic systems so they can survive and recover from shocks - and engineering is something that our postindustrial culture is good at. However there are both economic tensions - just-in-time-delivery, minimal redundancy - and social - the ability of coddled 'risk societies' to sustain sudden hardship and sacrifice. Introducing agility may be even more difficult, since the qualities needed for sudden and rapid flexibility and improvisation in emergencies collide deeply with our the planning based cultures of our established bureaucracies.

However while a shift towards greater agility and resilience is inevitable and essential, relying entirely on them would be foolhardy for at least six reasons:

- First because both are reactive. A reactive strategy is generally more painful than being proactive, since you then deal with a full-blown catastrophe rather than a budding problem. Extreme agility - going from peace to war, undergoing critical surgery, etc. - is costly, unpleasant and dangerous. Resilience as well is essential, and will become more so, but it is a backup strategy for when catastrophe has struck, involving even more pain. While we need a readiness to be both agile and resilient, we also need to make every effort to prevent such situations emerging in the first place.

- Second because agility alone is costly and inefficient. With limited or no forecasting one needs to maintain extreme flexibility 'a tous azimuts' to cover almost all contingencies. This is prohibitively expensive. It is far cheaper if one can set at least some priorities and focus part of ones resources on selected issues. This also provides a reserve of critical resources - time to think, assets to invest - that may be used to evolve, rather than spending everything on constant readiness.

- Third because a strategy of dedicated agility may be inherently flawed. Trying to prepare for everything may also mean that one can do nothing.

- Fourth because full agility is extremely demanding. It calls for a degree of constant and sustained vigilance and reactivity that the best in the private sector may just master within their niche, but that the state sector and post-industrial society do not yet master and which may not be feasible in any case when applied to the multiplicity of possible disasters that may emerge in the global context.

- Fifth, on the nitty-gritty political and bureaucratic levels, those who try to argue for funding to develop a readiness to deal with everything will lose their budgets to those who argue for coherent plans - no matter how mistaken these might prove.

Finally, because full agility and resilience are not necessary. Instead they should be seen as vital complements to discriminate forecasting and shield-based security. Forecasting can help us weed out some potential challenges, reducing the costs of an agility 'a tous azimuts' and the potential pain of resilient recovery from catastrophe. Agility can act as a backup plan against those challenges that do get through, while resilience can reduce our inherent vulnerability and increase our ability to recover. The difficulty lies in balancing the three, particularly in planning-based cultures. Nevertheless we must do so. In
today's security environment we will almost inevitably be caught out by Nicholas Nassim Taleb's Black Swans.\footnote{Taleb, Nassim Nicholas: \textit{The Black Swan. The Impact of the Highly Improbable}. Allen Lane, The Penguin Group, London, 1st ed., 2007: pp. 366.} These "unknown unknowns - the ones we don't know we don't know" as Donald Rumsfeld put it,\footnote{Transcript from a DoD briefing given by Donald Rumsfeld 12 February 2002. www.usinfo.state.gov} may also present some of the most severe dangers because they will catch us off guard.

C. So what can we see?

Given that what we can actually forecast with any certainty is limited, the first question is not so much what we can see but how we should look. Faced with today's challenges, the dusty museum of traditional political science methodology offers few answers. We must thus go one step further and develop new methods. The first part of this paper takes one such initial faltering step. Instead of cherry-picking among the variety of potential threats it seeks to develop a coherent understanding of the notion of security itself. This in turn provides a foundation on which an increasingly elaborate full map of all security branches and relationships can be plotted. Overdoing this becomes silly, because one reaches a point where the overwhelming complexity makes the diagram gibberish, somewhat like what the organigrams of the Department of Homeland Security appear to the uninitiated. However when it is kept to basics the resulting map is surprisingly useful. It results in a sort of taxonomy of security, establishing an hierarchy of issues. This is important, since it helps us discriminate between the really fundamental core issues and the increasingly tangential follow-on issues. Secondly, it also helps identify dynamic relationships between different components (in fact dimensions, but we will get to that) of the security tree.

First, to identify the critical areas we need to watch from among the vast mass of potential dangers, so we direct our efforts to managing those areas of greatest importance for our security. This maps out the terrain, establishing a taxonomy of needs and challenges. Second, to identify the key trends that we can currently discern in the critical areas and see where they might lead. Such a trend extrapolation will inevitably be both incomplete and fuzzy, but does help outline the broad contours of some potential future security challenges which are sufficiently plausible and significant as to merit our attention.

Knowing where to look

We need to know where to look, what are the key issues to watch. In a time when a bewildering array of possible security threats can and are raised almost weekly, focus is essential. This can best be achieved by re-examining what we actually mean by the concept of security. What is security, and what do we need in order to obtain it? Returning to this first-order question is particularly necessary under conditions of deep transformation, when yesterday's truths become increasingly insufficient. Answering this basic question in turn clarifies what we need to watch. This is done in section 3. below. While our ability to forecast is limited, knowing what to look for is an important start.

Understanding what we see

So what can we actually see? In fact very much, overwhelmingly much, but we can understand very little. The mass of data is enormous and growing, but we can only see backwards. We can see trends up to the present and we can extrapolate various linear and even lateral alternative future consequences, but our understanding of how they will actually evolve, mutate, fuse, transform, crash etc. is extremely limited.

To identify and understand significant trends in the key areas involves four basic problems:

- First is coverage. Making sure we cover all the critical trends. It is easy to miss hidden trends that later can have a major impact.
- Second, unilinear uncertainty. Extrapolating where identified trends might lead in their own right. They seldom evolve along a simple linear path but tend to curve in unexpected ways.
- Third, interaction. Forecasting where the complex interaction of several trends will lead. This can both radically alter the linear development of individual trends as well as leading to lateral jumps as several trends fuse and give birth to entirely new forces. This is perhaps one of the most difficult problems we face when trying to forecast.
- Fourth, the impact of external shocks from factors that emerge from outside the system, or from
outside our conceptual parameters.

Among these, we can to some extent distinguish between deep trends - basic drivers of whole chunks of the system - and their branches, offshoots and leaves. Using these we can roughly extrapolate where they might lead in the future, but not much more.

It is important to keep this limitation in mind. Several factors introduce an escalating degree of uncertainty. Some key elements are:

- First, wild cards, critical variables which we have overlooked. These can be single factors or events from either within a system (a volcanic eruption) or from outside the system (major meteorite strike), or minor components in a causal chain which suddenly acquire a major impact (the Y2K syndrome.)

- Second, unforeseen deviations, when a linear trend gradually deviates from its expected trajectory (the demographic projections of the Club of Rome).

- Third, mutations, when a linear trend transforms to such an extent that it makes a lateral jump towards an entirely different trajectory (several tipping points are examples of this, for instance the collapse of fish stocks off New Foundland).

- Fourth, fusion, one of the most common in our liquid age, when several trends interact in unexpected ways, leading to unforeseen lateral jumps. Several technological revolutions are examples of this.

The unexpected consequences of these wild cards, deviations, mutations and fusions can range from dramatic Black Swans to gradual deviations over time which nevertheless lead to entirely unexpected outcomes, such as the impact of the internet. It is only realistic to keep this in mind. Nevertheless, despite all these caveats, the identification of significant current trends can be used to sketch a rough outline of possible future conditions. Provided we do not place absolute faith in these sketches, they can serve to flag some significant potential developments. We may call this exercise discriminate forecasting, peering ahead, but acknowledging that what we believe we see is very uncertain.