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## **GROUND RULES FOR THE 21<sup>ST</sup> CENTURY**

### **Chapter 1**

#### **INTRODUCTION**

A large part of the changes we will see in the future will come from the unfolding and interaction between two major developments:

- Mankind's dominance over the planet will be challenged, not least by climate change and from increasing limitations on our consumption of natural resources.
- The world, and everything that takes place in it, will be extremely tightly connected with ever more sophisticated digital technology

On one side, *nature* requiring that humans acquiesce and accept our place within a larger system. On the other hand, *technology*, which makes humans a species apart, empowering us to transcend the limits, that nature otherwise had set for us.

How these two mega-trends play out, with and against each other, has been the common thread in my work ever since I wrote my first book, "Computer Dreams and ecological realities", way back in 1992. Now as then, the challenge, as I see it, is to understand how we can organize ourselves so that technological progress and sustainable development are not opposites. On the contrary: they are complimentary and indispensable to each other, particularly in light of the challenges we face.

The combination of increasing pressure on our resources and the extensive connectivity means that humans effectively share fate - for good and evil. We interact globally and we are increasingly interdependent. We exchange information, we mix cultures and economies every which way, and we face the same fundamental challenges.

The central theme of this book is that the relationship between the individual and the whole is shifting. It is obvious that the interest of the individual and the interests of the whole are increasingly convergent, and that community and collaboration will be much more important in the future.

You can no longer stand outside. You can't do anything without affecting others in a world in which we are linked so closely together and where humanity's demands have become so large relative to the resources available. But the growing importance of community is not necessarily a restriction of individual opportunity. It's easier and more efficient than ever to share and use each other's ideas, experiences and efforts to improve our world with new solutions and experiences.

The interaction between us is changing dramatically. We will be much more interdependent – for better and worse - and that goes for the relationship between individuals and the community, the relations between business and society, between nations and the global society, and between humanity and the rest of the ecosystem.

There is a greater chance of succeeding when you know the game rules

In many fundamental areas our circumstances are under rapid and drastic change.

Digitization permeates every aspect of our lives. Biotech can turn the way we understand our bodies, and the way we grow food, upside down. Nanotech is waiting

in the wings with revolutionary new materials. At the same time, it seems that environmental problems and climate change might pull the rug out from under the reign that man has had over nature in the past few hundred years. Finally, there is globalization, which kneads and mixes cultures and economies together, whether they like it or not.

The game we play in the 21-century is quite different from what we've been used to. We will need different skills and other ways to act if we are to prosper in the future.

That is what this book is about:

- What are the underlying drivers on the road ahead?
- How will they change our terms and conditions?
- How are the game rules changing?
- How do we cope and thrive, even?

These are big and broad questions, as is the book. We will not be diving deep into a single concept or any specific thesis. Rather, the project here is to take a step back in order to get an overview and to derive some general, overall ground rules for life in the 21st century.

It is hard to cope if you do not know the rules. You can hardly act competently and appropriately unless you understand what game you are a part of. It doesn't make things easier if the game itself is changing along the way, so the rules are rewritten regularly. You risk ending up acting according to a logic that's no longer useful – but because you're accustomed to the old game, it's really hard for you to let go of what used to work. You become like a dog in a game of skittles; clumsy, on the defense, in the way, endangered...

I will use the term “game rules” in two senses: The game rules are the general conditions that you need to understand how to exploit, develop and thrive under. And they are the concrete legal demands and limits to what you will be allowed to do and not do in future.

My objective with the book is to give readers (and myself) a better understanding and a better overview of the fundamental mechanisms, which drive our development, and to set out a logical framework in which to insert, organize and interpret the rapid flow of impressions, information, demands and new opportunities that we face at work and as individuals and citizens. By understanding the rules and the background for them we ought to be better able to assess, prioritize and make decisions on our way forward.

But let me start out by clarifying a game rule for this book: Just as many American advertisements end by the rattling off of a disclaimer against any eventuality that a lawyer can foresee, I will offer an almost ritual disclaimer. Like any futurist, I need to emphasize that *the future cannot be predicted*. The point of future studies is not to predict, but to challenge one's habitual ideas and thinking by considering *what might happen if ...* Things can turn out quite differently than anyone expected. You never know. But at least you can try to systematically analyze which drivers of change we are interacting with. Hopefully, this book can make the reader better equipped to make that analysis.

Our circumstance are becoming more complex

The language in this book is characterized by the terms and the understandings found in the field of systems theory and complexity science. Words such as *evolution*, *feedback* and *emergence* will be strewn across the pages.

*Complexity* is one way to describe a system in which many elements interact closely. A complex system is different from a simple system because the elements affect each other in all kinds of ways and combinations, making the system more changeable and unpredictable.

And that is just the way things in general are moving: Everything and everyone is connected, and we are interacting and influencing each other on a much wider scale than previously. Our circumstances, the type of products we consume and produce, and the types of challenges we face are becoming more and more complex - and that is why we need to know the rules of complex systems.

One of the mechanisms of complex systems deserves particular attention: *Self-organization* - that something entirely new can emerge from an interaction, something - a quality, a pattern - that was not present in any of the original, individual elements of the system. Self-organization implies that the sum can be more than the parts. This extra quality that can emerge through self-organization is the fundamental source of progress and prosperity in the world, and therefore it is in the mechanism of self-organization that we can find optimism and hope for the future: When we work together, we can create more than we would have had separately. By sharing ideas and knowledge, new ideas and deeper insights can emerge - enabling us to do better in this world.

Technology alone cannot secure this positive interaction, however. Technology connects us ever closer, but we need to actively step into the interaction ourselves, opening up to others' insights and sharing our own knowledge and ideas. We need to see ourselves as more than individual. Increasingly, we are part of a larger context: We need to understand that our own success is becoming far closer associated with how the entire community is doing.

This change of perspective, from individualism to a more collective view, is not a simple change of mind. It requires us to confront a lot of uncertainty. Complex systems have less clear answers and no definitive solutions. Circumstances change, balances shift, even basic truths are challenged. One must constantly adapt and evolve in order to remain fit for the prevailing circumstances. We know the demand for flexibility and adaption from evolution in nature, but it applies equally to companies developing new products or to politicians plotting strategies. If you think you have found the philosopher's stone once and for all, that's when you are seriously at risk of losing touch with reality

#### Gray zones between the old and the new world

This book is a both/and rather than an either/or type of argument. Although there will be large and rapid changes in the coming years, it's not like we have completely replace the logic that have believed in so far. Rather, we're in a transitional phase, a gray zone in which the new and the old logics overlap and merge.

Let me give some examples. There is a strong trend towards consumers becoming co-creators of the products and services we use. This doesn't mean that consumers will take over the entire production and design of everything they use, but consumers will be participating more actively. By studying examples of how producers and

consumers are interacting closer, you gain insight into what opportunities and challenges it might entail, as the trend takes better hold.

Similarly we will take a look at how an increasing share of power, initiative and responsibility is distributed in networks of participants in the network, rather than being concentrated at the top of a hierarchy. It doesn't mean that there won't still be leaders and employees, or that all decisions will be bottom up. But by looking at organizations that function as a network, you can get a better sense of when hierarchical structures are the most effective, and when they fall short compared to looser and flatter forms of organization.

As we shall see, there are many other interesting examples of this kind of gray zones. For example, cooperation and competition will be mixed. Openness and secrecy will get tangled, and public and private life will be harder to separate. In technology, we find that the virtual and physical realms are increasingly blending: Where are you, really, when you sit and talk on the phone while surfing the web? "Here" and "there" converge - not entirely, but more and more as everything and everyone goes online.

It is in these gray zones where the traditional and the radically different increasingly overlap that the really exciting and dynamic developments are taking place. This is where the interesting clashes and interactions occur; this is where you encounter the important new challenges, where you see rapid growth, a new culture, and the budding business models for a new economy. And it is where you'll first be confronted with the demands for new skills and a mindset for the future

### **It will be cramped on the way through the funnel**

The adjustment and re-negotiation of the relationship between the individual and community is a main theme of this book, and it re-occurs in practically all the cases and examples we will be discussing.

At the most fundamental level we are increasingly bound together because we face a shared and critical challenge. According to UN projections, the global population will increase by about one-third up to 2050. We are currently 6.8 billion, and the UN expects this will grow to 9.1 billions in 2050 - an increase of 2.3 billion people. To put the extent of that growth into perspective, we are due to increase by almost as many as the world's entire population in 1950.

Not only will the population continue to grow fast; each of us is also consuming more and more, even at a time, when many of the most important resources are heading to depletion: oil, water, fish, metals, topsoil ... Furthermore, in the coming decades we will really start to feel the consequences of climate change.

There are technologies in the pipeline, which could conceivably revolutionize our production and our use of energy and other resources. Population growth is slowing and there is an increasing awareness and understanding of the problems we jointly face. But it is a very large and rather inert system that must change course.

What's needed is basically a radical transformation of the planet's infrastructure, and projects like that take decades. The cars, houses, washing machines, gas boilers and power plants, we invest in today will be with us many years to come. New cars generally stay on the roads for 15 years before being scrapped. The lifetime of buildings is measured in decades if not centuries.

**The Swedish physician Karl-Henrik Robert, who founded the international environmental ngo, The Natural Step, has compared the situation of mankind in the coming decades with having to go through a funnel. There are solutions ahead, but it will take some time before they can really make an impact in solving our needs. Meanwhile, it will get very crowded and tight before we come out at the other end of the funnel.**

Humanity will be closer connected, simply because the space we share will be increasingly crowded. There will be more of us, and each of us takes up more space in the sense that we consume more and move around more.

**The interaction between us is intensifying. Partly because everyone and everything is connected. Partly because a growing population on a final planet will get squeezed ever tighter.**

**It is becoming clearer that we affect each other, that we are interdependent, and that increasingly we need to see ourselves as a tightly integrated part of a much larger context.**

Tighter coupling, less wiggling room

We are not, however, moving towards a new type of communism or some other complete subjugation of the individual to the interests of Society. In fact, thanks to technology, each of us has far more responsibility and more opportunities to be creative and shape our lives.

It's a complex, and mixed development. As individuals we are becoming more powerful – while at the same time our dependence on the community will grow. As we become more individually empowered, the community will hold each of us accountable to a greater extent. In a tightly coupled and crowded system the limits for individual expression will necessarily get narrower.

The shift towards greater community manifests itself in many different contexts. In business, it will be both favorable and necessary to involve users, partners and even competitors to a much greater extent. Otherwise you simply won't be able to develop and deliver the more complex and precisely customized products that are required to compete in the future.

The technology to exchange and coordinate is rapidly falling in price. Furthermore, as value creation is increasingly based on knowledge rather than physical materials, we can even keep what we share with others. In other words, cooperation is becoming a better deal.

These developments can be summarized as the transition from industrial age to a new culture - with new roles, new organizational forms, new ways to create value and new demands on our skills. We still don't know enough of how it will change society to name this era. But *the network* is a crucial element.

The machine was the icon of industrial age. A machine delivers a regular and predictable outcome, and we have been inclined to believe that politics and economy functioned similarly. But many of the 21-century problems cannot be predicted or solved definitively. The world is full of wicked problems; tricky challenges, which have no obvious or correct solution. Instead of assuming regularity and predictability,

we need to learn to deal with paradoxes, dilemmas and ambiguous truths in a world of flux and complexity.

Networks are better fit. A network is not hierarchical. Knowledge, initiative and creativity are distributed to many more participants. The network is loosely connected, more volatile and diverse than the rigid and standardized structures of industrial society.

It takes a different attitude to thrive in a complex network. You must be willing to interact, and aware of the interests of the system and community you depend upon. You need to be open to change and diversity and more comfortable working from probabilities rather than certainties.

Engaging in interaction carries risk - but this book's premise is that all else being equal, you will be better qualified to deal with uncertainty, if you know the rules and the mechanisms that generally determine how the system behaves.

#### Ideas and knowledge keep famine from the door

One of the main changes in the coming decades is that we will go from a period of abundant resources and a growing material consumption to a period of serious and growing pressure on the natural resources: water, energy, food, metals...

As illustrated by the metaphor of the funnel, we are in a race between a growing population's increasing demands and our ability to find new resources and new technologies to address those needs. The big question is whether we can develop new technologies before we reach some sort of shortage and collapse sets in.

So far we've managed amazingly well. But the challenges we now face can seem insurmountable.

We have never been richer, we have never had stronger technologies and greater knowledge, yet it also seems as though we've never been closer to driving humanity over a cliff - and taking a large part of the other species on the planet with us into the abyss.

The good news is that we never had better tools to understand the world and for developing solutions to thrive in it. It is our capacity for innovation, which has helped mankind to thrive, and on the way forward, we remain dependent on our insight and ingenuity. Our innovative ability is what makes humans special, and through technology we can enhance the creative process itself in order to combine ideas quicker and from a greater number of participants.

But being smart is not enough. The biggest challenge for the modern man is perhaps to act responsibly. Our knowledge has given us power, not only over our own species fate. Humans dominate the planet – we are its stewards. We can manage the planet's wealth sustainably or we can squander it away in a spiral of destruction. It's up to us. We must connect our ideas and our knowledge to find entirely new ways of achieving much more utility with much less impact on the globe. And we must do so from an understanding of our responsibilities to the larger context we are part of.

#### A business book for anyone

This book is mainly addressed at people in business. It tells many cases of how companies are facing new demands and opportunities, and how some companies have succeeded by adapting to the trends of the time.

On the other hand, it is not a typical business book with breathless formulas for winning or lists of tips & tricks for managers. There are no quick fixes here. It's about the deep and long-term undercurrents, which will shape the developments of the coming years.

In fact, the game rules mentioned are so general that I would argue that they are relevant to virtually every citizen, consumer, employee and teacher. When I focus on business, it is mainly because business is wonderfully concrete. It has to pay. If no one is willing to pay for your idea, then it is not good enough yet. Business is a mighty force. Patterns of consumption, investments and innovation affect the world, our conditions, and our opportunities and prosperity very directly. In this sense, business is as political as anything.

#### A book about patterns and relationships

Zooming out and observing the world in a larger perspective allows you to discern some general patterns. Often the same pattern is found in very different contexts, and therefore one can understand the logic in one area by comparing with the mechanisms behind the development of an entirely different matter.

The attentive reader will soon notice that I have a particular approach to presenting the patterns: I will introduce a mechanism - feedback, for example - and argue that it can be found across many domains. Then I will support it with a string of different examples, from the market, society, biology, sociology and so on. Juxtaposing concepts from many realms has a clear purpose: to accustom ourselves to seeing how the same mechanisms occur in different contexts.

At the linguistic level this is reflected in the fact that I mix words and terms across academic disciplines. Traditional borders are dissolving and disciplines are merging. Similarly, the metaphors we used to understand and order the world are no longer descriptive. Once society was described as a clockwork world or as a great machine. In recent decades we used the computer and its software to explain society and its processes. But in many the realities of the 21st century are better described with concepts from biology. The systems and relationships that we face and act in relation to behave increasingly as though they were sentient, learning and intelligent.

For some, it is controversial to describe technology as “living”, and in fact I don't have any intentions to get into philosophical debates about whether technology really can be alive or not. It is not an issue that keeps me awake at night. My mission is simply to note that technology and our culture has evolved to a stage where it is often best described with concepts from biology.

#### A book that can be read at different speeds

I have tried to write and structure the book so it can be read at many different speeds. Headings and subheadings have been formulated so that readers hopefully can orient quickly themselves to find the particular topic they need to read about. Similarly, the chapters are grouped into sections with the same overall theme, the section that contain the main conclusion and important points are set in bold, which should allow readers to skim the text easily - and finally, I have kept a few repetitions, in orders for the chapters to be able to read on their own.

Books have their own time scale. They take years to write, many months to produce, and they are on the market for years, not days or weeks. In some ways this is obviously frustrating, because you cannot write a book about current events without your examples becoming obsolete, even while the book is at the printer. As a writer you have to choose the cases and facts, which seem to be durable. But who knows what those are? Should anyone happen to read this in five or six years, it will be clear that the book was written between 2007 and 2011, strongly influenced by climate issues, the great financial crisis, Wikipedia and John Mayer's music. Tomorrow will bring other headings, and different tunes - but I do expect the general rules will last far into the 21st. century. Enjoy the reading!