The Addison Wesley Signature Series

A Mike Cohn Signature Book

Management 3.0

Leading Agile Developers, Developing Agile Leaders

Jurgen Appelo

Forewords by Robert C. Martin and Ed Yourdon

Praise for *Management 3.0*

"I don't care for cookbooks, as in '5 steps to success at whatever.' I like books that urge you to think—that present new ideas and get mental juices flowing. Jurgen's book is in this latter category; it asks us to think about leading and managing as a complex undertaking—especially in today's turbulent world. Management 3.0 offers managers involved in Agile/lean transformations a thought-provoking guide how they themselves can 'become' Agile."
—**Jim Highsmith**, Executive Consultant, ThoughtWorks, Inc., www.jimhighsmith.com, author of *Agile Project Management*

"An up-to-the-minute, relevant round-up of research and practice on complexity and management, cogently summarized and engagingly presented."
—**David Harvey**, Independent Consultant, Teams and Technology

"Management 3.0 is an excellent book introducing agile to management. I've not seen any book that comes near to what this book offers for managers of agile teams. It's not only a must read, it's a must share."
—**Olav Maassen**, Xebia

"If you want hard fast rules like 'if x happens, do y to fix it' forget this book. Actually forget about a management career. But if you want tons of ideas on how to make the work of your team more productive and thereby more fun and thereby more productive and thereby more fun and…read this book! You will get a head start on this vicious circle along with a strong reasoning on why the concepts work."
—**Jens Schauder,** Software Developer, LINEAS

"There are a number of books on managing Agile projects and transitioning from being a Project Manager to working in an Agile setting. However, there isn't much on being a manager in an Agile setting. This book fills that gap, but actually addresses being an effective manager in any situation. The breadth of research done and presented as background to the actual concrete advice adds a whole other element to the book. And all this while writing in an entertaining style as well."
—**Scott Duncan**, Agile Coach/Trainer, Agile Software Qualities

"Don't get tricked by the word 'Agile' used in the subtitle. The book isn't really about Agile; it is about healthy, sensible and down-to-earth management. Something, which is still pretty uncommon."
—**Pawel Brodzinski**, Software Project Management

"When I first met Jurgen and learned he was writing a book based on complexity theory, I thought, 'That sounds good, but I'll never understand it.' Books with words like entropy, chaos theory, and thermodynamics tend to scare me. In fact, not only did I find Management 3.0 accessible and easy to understand, I can [also] apply the information immediately, in a practical way. It makes sense that software teams are complex adaptive systems, and a relief to learn how to apply these ideas to help our teams do the best work possible. This book will help you whether you're a manager or a member of a software team".
—**Lisa Crispin**, Agile Tester, ePlan Services, Inc., co-author of *Agile Testing*

- Discuss various creative techniques with your team. Which ones are used right now? Do people need to learn more of them?
- Identify forms of extrinsic motivation in your organization and come up with a plan to eliminate them—in particular the financial ones.
- Review the list of ten intrinsic desires. Are you trying to address motivation of team members by relating your efforts to these basic desires?
- Regularly use Scott Berkun's one simple question if you're serious about motivation.
- Learn about personalities and diversity in your team by taking the four steps toward a team personality assessment.
- Use the Do-It-Yourself Team Values list to generate a small list of values that can guide your team in their daily decision making.
- Consider thinking about your own personal values. Are they in line with what you expect from your team? Are they different? Can you lead by example?
- Move your desk to the same area where your team is. If this is not possible, move only your chair.

Chapter 6

The Basics of Self-Organization

Science is organized knowledge. Wisdom is organized life.

—Immanuel Kant, philosopher (1742–1804)

For centuries, mathematicians have preferred to work with *linear (ordered) systems*, and they considered *nonlinear (complex) systems* to be a special group. But reality is full of paradoxes. Nonlinear systems are the norm and abundant throughout the universe, whereas linear systems are a rare and special breed. Someone once said that distinguishing between linear and nonlinear systems is like dividing all species into two groups: fruit flies and non-fruit flies. And humans, together with whales, tigers, and woodpeckers, would be part of the non-fruit flies group. Could it be that mathematicians are, quite literally, a bit simple-minded? Or might this indicate that they are only human and also part of the group of non-fruit flies?

This chapter focuses on the concept of **self-organization** in nonlinear systems. This topic is fundamental to both management and software development. Therefore I intend to discuss it quite rigorously. And I will make it clear why Empower Teams is the second view of the Management 3.0 model.

Self-Organization within a Context

In the beginning, there was nothing. And then there were membranes or strings, which formed quarks and gluons. And the quarks and gluons organized themselves into composite particles, such as protons and neutrons. And these guys, with the help of some friends called electrons, subsequently organized themselves into atoms. Then these atoms got together one day and decided to take self-organization to yet another level, and they formed molecules. Millions of different molecules were created that way, and they created communities, forming stars, planets, comets, and other crazy objects.

Then some of the molecules, swimming around in a warm and cozy pool, thought they were the coolest of the lot, and they decided to replicate themselves. They adopted the trendy name RNA. The copying frenzy quickly went in many directions, and soon there were prokaryotes and eukaryotes (and viruses, too). And boy, it didn't stop there either.

These biological cells self-organized into millions of different species, and it didn't take long for the brain of one of those species ("humans") to form consciousness. This new aggregate system subsequently decided to take self-organization to even higher levels. It formed tribes, societies, cities, businesses, and (as one of its least successful ideas) governments.

From the beginning of the universe, everything in it was shaped by self-organization:

> Self-organization is the process where a structure or pattern appears in a system without a central authority or external element imposing it through planning.[1]

Self-organization is the norm. It is the *default* behavior of dynamic systems, whether these systems consist of atoms, molecules, viruses, species, or businesses. Or software developers….

It is a bit silly that self-organization of teams is regularly hailed as a "best practice" in Agile software development. Self-organization cannot be a best practice. It is the "default practice" of any system, including teams. No matter how you manage a team, there *will* be self-organization. People will discuss and agree on lunch meetings, folder structures, workplace territories, and birthday parties. Everything that management does not constrain (and much that it attempts to) will self-organize. Humans have behaved that way for 200,000 years.

But is what happens also happening in the "right direction?"

Though every self-organizing system can have its own direction, the possible directions are limited by its environment. The latest theories of the universe suggest that ours is just one out of many, and that our specific universe is "special" (for us) in that it has some specific cosmological parameters. It is these cosmological constants that have constrained and given direction to the self-organization of quarks, protons, atoms, molecules, and the whole shebang.

Likewise, the earth's environment has constrained and given direction to the formation of biological cells. And these cells in their turn have

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1 http://www.mgt30.com/self-organization/. Reprinted under the Creative Commons License. Please visit http://creativecommons.org/.

constrained and given direction to the formation of viruses. And so on, and so on.... No self-organizing system exists without context. And the context constrains and directs the organization of the system.

Self-Organization toward Value

Some people would argue that animals know the meaning of value. After all, monkeys are reluctant to give up bananas when they possess them. But I beg to differ. Behavior of animals, as programmed by their genes, follows evolutionary strategies. From an evolutionary perspective, it makes perfect sense not to throw away a banana. Scientists can explain almost all social behaviors in animals from an evolutionary perspective. They can explain why I don't like throwing away my old shoes, even when there's no reason to keep them. It's just the beast in me.

What makes humans unique is that, with the introduction of consciousness, we invented morality, laws, and authority. We defined *preferred directions* for self-organizing systems because we see some results as valuable and other results as harmful. We value human lives; therefore, we consider malaria parasites and HIV viruses an undesirable result of self-organization. From an evolutionary perspective, it might seem strange to extend the lives of 80-year old people. But (fortunately), we still do it. We value lots of other irrational and unnatural things, too, like nondiscrimination, peace, and monogamy.

Self-organization makes no distinction between good or bad, between virtues or vices, between valuable or harmful. Systems simply do whatever the environment allows them to do. Whatever they can get away with. And so, humans embraced the concept of **command-and-control**.

In their attempts to steer self-organizing systems (businesses, teams, countries) in the direction that *stakeholders* considered to be valuable, people started assuming command and resorted to a command-and-control style of giving direction. That's how managers got their positions. And that's why governments try to run countries. They care about results, and they want to make sure that self-organizing systems either *produce* valuable things (products and services) or *refrain* from harming valuable things (human lives, economic growth, natural resources). Managers want software teams to create valuable software and make money, and they don't want teams to run away with the cash register. Sometimes the managers succeed. Sometimes they don't.

The funny thing is that many people think command-and-control has always been the norm, and that "self-organizing teams" are a new and interesting concept. But that's just the common "simple-mindedness" again. Self-organization is the formation of things without top-down direction, and it pervades the universe. Conscious command-and-control (imposed order) was invented 13.7 billion years after self-organization, by humans, in their attempts to protect what they believe is valuable. Self-organization is the norm. And command-and-control is the special case.

In his 2001 paper, "Agile Processes and Self-Organization," Ken Schwaber wrote the following:

> Agile processes employ self-organizing teams to handle the complexity inherent in systems development projects. A team of individuals is formed. They organize themselves into a team in response to the pressure of a deadline, reminding me of the saying, "Nothing focuses the mind like a noose!" The pressure cooker of the deadline produces cooperation and creativity that otherwise is rare. This may seem inhumane, but compared with non-agile practices for dealing with complexity, self-organization is a breath of fresh air.[2]

Indeed, for *some* people, locked up in command-and-control organizations, self-organization is like a breath of fresh air. But the fresh air existed long before humans came on stage and invented stifling bureaucracy. And I don't believe that cooperation and creativity are otherwise rare. I just spent several pages of this book explaining that the *whole universe*, and everything in it, is the product of cooperative and creative self-organization. That's not rare. That's ubiquitous.

Self-Organization versus Anarchy

Some experts think that self-organization is different from **anarchy** [Highsmith 2009:60]. Jim Highsmith says that self-organization (in a social context) *implies* some form of leadership, and that it otherwise degenerates into anarchy. I respectfully disagree, although my disagreement is only about semantics.

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2 Schwaber, Ken. "Agile Processes and Self-Organization" http://www.mgt30.com/agile-processes/. 2001. Reprinted by permission of Ken Schwaber. [Schwaber 2001].

The origin of the word "anarchy" is *anarchia*, from Greek, and from *anarchos*, which means "having no ruler." Various dictionaries list two meanings for anarchy:

- Absence of order (or presence of disorder)
- Absence or denial of any authority or established order

This means either of two things: chaos (no order) or complexity (order but not *imposed* by an authority). This is depicted in Figure 6.1. Governance stretches from complexity into order. And anarchy, the absence of governance, stretches from complexity into chaos. (Note: It is merely a simplified, metaphorical picture. But it works for me.)

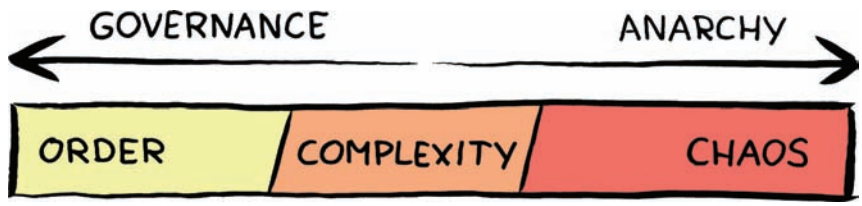

FIGURE 6.1
Governance versus anarchy.

Anarchy has a bad name, which is undeserved. In the minds of most people, anarchy equals chaos. This misconception is probably the main reason why some experts don't like associating self-organization with anarchy. But galaxies behave in an anarchistic manner, and yet they are not chaotic. Ecosystems are anarchistic, but they are also not chaotic. And countries without (working) governments are anarchies but are also not necessarily chaotic.[3]

A self-organizing system can be the complex variant of anarchy. This is true in physics, in chemistry, in biology, and in sociology. There are many definitions of self-organization, and none of them require leadership, management, or authority. It makes no sense to change the meaning of self-organization when applied in a social context.

The real issue that some people have with anarchy is that such unmanaged systems can behave in a way that the stakeholders don't value. When my children are playing a game, running around me and yelling in my ears, I would eagerly agree that this is anarchy. But the children are self-organizing. It just means their way of self-organizing is not appreciated by me as their primary stakeholder. It's the same with software developers playing football in the office while people are working. (I'm

3 http://www.mgt30.com/anarchies/.