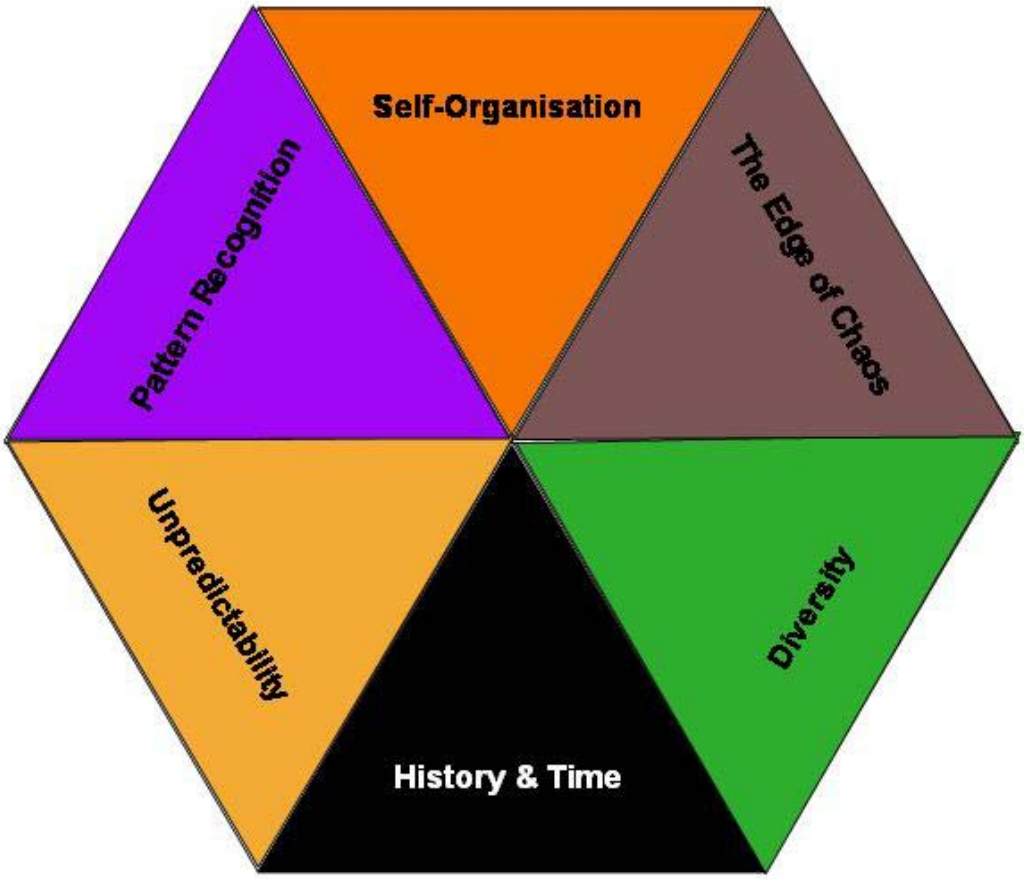
The Secrets of the Six Principles

A Guide to Robust Organisational Development



Edited by
Carol Webb, Liza Wohlfart, Michael Wunram, & Atai Ziv

The RODEO Consortium

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ron@futurecenter.co.il, +972(9)8946281

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CHAPTER 1: INTRODUCTION
By Carol Webb & Fiona Lettice

Heard the one about the butterfly flapping its wings in Mexico causing a tornado in Japan? Or how birds follow simple rules when flying in formation so they don't bump into each other? For the past few decades intellectuals and business people alike have been excited and inspired by ideas coming out of the Santa Fe Institute, in America, to do with things called 'complexity theory', 'complex adaptive systems', and 'self-organisation', amongst others. As a result, leaders in cutting-edge business and research all over the world have started to try and apply these ideas to organisations and the people in them. In 2001 it was felt these ideas could be used to help businesses develop and adapt both flexibly and robustly in environments characterised by a fast rate of change and high levels of complexity in Europe.

This excitement and enthusiasm for the topic of complexity science and business development was channelled into writing a proposal for submission to the European Commission to research this area in more detail and in a European context. The initiators of the proposal, Cranfield University, Innovation Ecology, the Fraunhofer Institute, CDN and BIBA, looked for additional, suitable partners and came up with the mission and vision to guide the proposal and subsequent project:

> *"To explore and create a coherent perception of the modern business organisation, grounded in complexity theory. Based on that construct, an integrated approach and accompanying instruments (both methodological and software tools) for business development will be proposed and experimented with, where the key focus is on achieving adaptability and robustness in a turbulent environment."*

The project was launched in April 2002, with a kick off meeting hosted by the project co-ordinators, BIBA, in Bremen. This set the team in motion, and led to a fascinatingly practical and inspiringly intellectual journey through the project. This included an extensive review of the literature, interviews with experts and a continuing series of workshops with all members of the RODEO team present. These team workshops were hosted in turn by each of the partners, and were an excellent environment in which the industrial partners shared their experiences with each other and the academic partners brought ideas and concepts from the literature to the table for discussion and debate. Once the initial understanding of the subject area and the unique situations and requirements of all of the partners had been understood, the team was able to start specifying and developing the RODEO Process. The early versions of the tools were implemented in the partner sites and the learning was used to refine and develop the tools further.

This book is the culmination of the work that has gone into this project and illustrates the concepts that have underpinned the work, as well as describing the tools that have been developed, and the experiences of the industrial partners in using the RODEO Process in their organisations.

Complexity science and the six core complexity principles at the heart of the RODEO Process are described in part one. These principles include: self-organisation and emergence, diversity, the edge of chaos, history and time, unpredictability, and pattern recognition.

Can the six principles work for you? Part two of this book tells you how you could make the 6 complexity principles work for you and your own organisation by providing an introduction and facilitator guide to the RODEO Process and robust business development in turbulent environments.

The RODEO Process has been tested and really does work. Part three of this book is a set of stories from organisations that tried it.

And Part four elaborates some lessons learned, and suggests some key implications the six complexity principles will have for future business and research.

We hope you enjoy it!

The RODEO Team!

PART 1

Unleashing Complexity Science

An overview of the benefits of applying complexity science in organisations and in using it to design a robust organisational development process, namely, the RODEO Process, is provided here.

As such, this part of the book introduces the topic of complexity science and organisations.

Having done this, the other chapters in this part go on to describe each of 6 key complexity principles the RODEO Process is based on, and their relevance to organisations and robust development.

The 6 complexity principles are:

Self-organisation & Emergence | Diversity | The Edge of Chaos

History & Time | Unpredictability | Pattern Recognition

CHAPTER 2

WHY ORGANISATIONS NEED COMPLEXITY SCIENCE

By Carol Webb, Liza Wohlfart & Michael Wunram

Change and Turbulence

"It is the age of change" – but then, when hasn't it been? Change, it seems, is constant, but over the past few decades the pressure of change has made people in organisations and business sit up and say something. In recent times many organizations report having faced dramatic changes in their socio-economic landscape and operating environment. These changes have been felt to be far reaching and global, affecting everyone, everywhere. The pace of change, it is said, has increased. This has left people in business feeling as though they are operating in turbulent business environments, which are both highly dynamic and highly complex.

As a result, managers in organisations of all shapes and sizes are now being challenged by the following questions:
a) How do I track and make sense of change in order to survive and compete in such turbulent markets?
b) How do I manage the transformations required?
c) How do I help the organization to grow and ensure its long-term sustainability?

The RODEO project set out to help organizations and their employees to answer these questions, and to manage the challenges facing them for Robust Business Development in turbulent environments.

Turbulent business environments: ***The degree of unpredictability in non-linear, constantly changing environments, combining both internal and external business factors***

The well-known management guru, Peter Drucker, said: "The world economy will continue to be highly turbulent and highly competitive, prone to abrupt shifts ..." [Drucker, P.F. (1997) Managing in turbulent times. Oxford: Butterworth-Heinemann]. And, indeed, everyone agrees that turbulence is a phenomenon corporate management has been dealing with for decades, and that a certain degree of turbulence has **always** been part of business. But a constant increase in turbulence is now challenging traditional strategic planning methods. This is due in part to technological advancement, information overload, and new socio-global trends. So how can modern business organisations survive? How can organisations develop in a competitive and sustainable manner?

There is no generic solution or blueprint for organisational success and longevity.

Operating environments are changing continually, and each company is continually faced with different situations. This means that responses are relative to time, place and people. This realisation raises a vital question: "How can a firm achieve "fit" between what it does and what its industry environment requires today, while also preparing itself to stretch capabilities and evolve its culture to tackle the new environment that tomorrow might bring? This has always been a challenge for firms, but the speed with which environments and markets change in today's world makes this an even more pressing concern" [Cusumano, M.A. and Markides, C. C. (2001) Strategic Thinking for the Next Economy. MIT Sloan Management Review. San Francisco: Jossey-Bass]. Facing this challenge entails a fundamental change in the strategic perception of the organisation that is in conflict with the traditional mechanistic 'command & control' management that was taught at most business schools throughout the last century. In an environment where the future is unpredictable and unimaginable, management becomes a matter of managing change, and preparing to change continually.

The RODEO Process aims to significantly help industrial organisations to improve their long term performance by introducing a business development process that is:

- Adaptive and robust to changes
- Turns changes and risks into opportunities
- Informed by 6 key principles of complexity science
- In acknowledgement of dynamic human competencies.
- Likely to generate radical business concepts, not only incremental small technological inventions.

This is precisely what we found out was needed in order to grow and enhance organisational competitiveness in today's and tomorrows unpredictable turbulent environments.

Perceptions of Turbulence

Following the intervention of the RODEO Process with the RODEO project industrial partners (IPs), a change in the strategic perception of turbulence was revealed. Prior to their encountering the Process, IPs very often reported feeling intimidated by turbulence and change as something that could cause problems, and that was not wanted. However, following participation in the RODEO Process, we found their perception of turbulence, and change, had radically altered to the following qualitative statements:

Organisation	Turbulence	Change
Swiss SME Support Organisation	A state of normality, an opportunity, a changing balance	A continuous phenomenon interacted with
Spanish Design & Engineering Company	Something that exists that is natural and normal. It brings opportunities and you can take advantage of it. It	Accepted as part of daily business life.

	can bring people together.	
Swiss Psychology Consultancy Network	Sometimes stressful but relied upon as a way of operating. Articulated through the six principles.	Necessary to operate.
Spanish Automotive Interior Designer / Manufacturer	Something positive. Created in order to fuel growth. Feel comfortable with it and use it to plan budget.	Stress about change depends on management intentions.
German Automotive Part Manufacturer / Supplier	A positive challenge brought by increased self-confidence. A criteria to measure quality of an organisation – a key success factor. A chance and opportunity.	A chance.
Austrian Technology Centre Network Support Organisation	Unexpected changes happening in the external environment. Negative turbulence also seen as positive sometimes.	Constant.

SPOTTING *YOUR* ORGANISATION'S RESPONSES TO TURBULENCE:

- **How in touch with your external business environment are you/your team/department etc?**
- **What is happening in your network?**
- **Does your team/department/organisation adapt to change easily?**
- **What changes and risks is your organisation currently facing?**
- **Do the competencies of the people in your organisation fit the requirements of today's challenges?**
- **What radical concepts are emerging in your organisation that could be exploited tomorrow?**

Feeling Robust

Robustness: ***adaptive business strategies designed to continuously develop products and processes within market combinations, and to utilise an organisation's strengths and competencies. Making your business adaptive to evolutionary and revolutionary shocks, internally and externally.***

As innovation guru, Gary Hamel says: *"Top management's job isn't to build grand strategies. Its job is to build an organisation that is capable of continuously spawning cool, new business concepts."* The RODEO approach acknowledges that the adaptability of your organisation can be increased by focusing on its **robust development**. This means: shaping the continuous process of developing and aligning products, services, and market

combinations, with the organisation's people and competencies, in turbulent environments, in a sustainable way. In short, people in businesses need to develop alternative development strategies at the same time, until it becomes clear how the whole business ecosystem is converging.

These new business ideas need to be part of a robust strategy. Regine (1998) suggested that planning such strategies cannot be based on outdated modes of thinking about enterprises as machines in unchanging environments, "Everybody knows that in most industries long-term strategic planning is near impossible, and this is often viewed as a failure on the part of management. When you recognize that the business environment is a complex system that is inherently unpredictable, you understand that the failure of long-term strategic planning is not a failure of management but an expected outcome of the business environment. **The challenge for managers is to feel comfortable merely setting the direction for the future and to be ready to adapt and evolve as the environment changes."** Business leaders, management consultants and theorists are looking beyond traditional metaphors (business as a machine, business as an information processor) to gain a better understanding of how to respond to this new, fast changing environment. Lewin (Lewin, 1998) explained the reason for this exploration, "Traditionally, business people think about their worlds in a very mechanistic, linear way that is characterized by simple cause and effect and is predictable. Most of the world isn't like that. Complexity theory looks at these systems in ways that are organic, nonlinear and holistic."

Although the potential of applying complexity concepts to management literature is clear, there are no coherent and in-depth approaches dealing with the subject of creating robust new business directions. None of the current approaches shows a deep integration of complexity science thinking and as a result none of the approaches coherently meet robust business development needs. Further, there is a lack of tools for supporting robust business development. The RODEO project approach has responded to this need by developing modular information and communication tools which contribute to the concept of robust business development. The focus of these models is on supporting the information gathering and decision making processes within strategy formulation, monitoring and performance management.

The RODEO Process builds on the current understanding of turbulence and uncertainty, and integrates 6 central ideas of complexity science. These are highly relevant because organisations can be talked about in terms of complex living systems, and so the principles of complexity and living systems can be transferred to the application of supporting tools and processes for business development. The aim is to support companies to achieve robust business development in highly dynamic and knowledge intensive environments, by shifting from a mechanical to a more flexible and human-centred organic approach. From this perspective the challenge is to integrate the living system oriented business development concept with organisational management, strategic management and performance management into a single, yet evolving, framework.

RODEO Target Group and Objective

In addition to the 6 complexity principles, the RODEO Process has been also influenced by the target group and the wider objectives the project concentrates on. The RODEO project set out to focus on knowledge-intensive services and high-tech manufacturers in turbulent environments, with the core objective of ensuring robust business development. Our expert interviews showed that robust behaviour basically includes three aspects: a high level of flexibility/adaptability; good forecasting; and, a good sense of identity.

Flexibility means that adaptable companies are based on adaptable organisational structures and/or have methods to react to changes through fast strategic adaptation. Flexibility also means independence, i.e. independence from single employees and suppliers (critical nodes) and independence from specific products.

Good forecasting implies that, on the one hand, important factors are tracked (if possible), and on the other hand it is also important to know which factors cannot be tracked, what uncertainty an organisation is facing. The third aspect of robustness as identified by the RODEO team is a good sense of identity.

Identity and Robustness

A "good sense of identity" – a key factor enabling organisational robustness as found out by the RODEO team, is crucial. As Michael Lissack said, "If you have a good sense of identity, such that you are prepared to dialogue about the next thing, then that's an indication of robustness " (in interview, November 2002). A good sense of identity can help companies to choose the right network partners and to make faster and better decisions, so that their flexibility and adaptability increases.

But what is the "identity" of an organisation actually and how can it be distinguished from its core competences? Is there a difference at all, or is "identity" just another expression of the same thing?

Core competencies are generally considered as some kind of technical ability that constitutes the specific USP (unique selling point) of a company, i.e. which makes it special in contrast to its competitors and gives them a competitive advantage. But even the two strategy experts Hamel and Prahalad, who can be considered as the original “authors” of the term “core competencies” describe them in a much broader, general way. They conclude that core competencies are somehow the "collective learning in organisations", influenced by the way "production skills are coordinated and multiple streams of technologies integrated" (1990). "Competencies are about the organisation of work and the delivery of value", they say, which actually comes pretty close to Lissack’s definition of identity as "abilities in the light of context", he continues: "I think core competencies are nonsense. I don't believe they exist. I have trouble with that whole concept because usually calling something a core competency is a label affixed to a historic state and is not a label affixed to a process. [...] So robustness depends on knowing what your abilities are, but it is ability in the light of context.

Dorothy Leonard-Barton, another core competencies expert, similarly includes non-technical aspects in her definition of core competences as she describes

core capabilities (or core competencies) along four dimensions: physical systems, skills and knowledge, managerial systems and values.

So what is special about identity then? Hamid Bouchikhi considers core competences as part of an organisation's identity, besides other factors such as the context of its founding and the characters of its founders, its geographical place, strategy or organisational design. He describes the identity of companies as "their formative experiences, their beliefs, their knowledge bases and their core competencies" (2003, page 1). The basis for identifying the identity of a company is for him strongly linked to the internal perception and external image of the company: identity is the "set of distinctive attributes that key stakeholders (employees, owners, suppliers, customers, bankers and shareholders) view as *core, enduring* and *distinctive*", he says.

This aspect of image can also be observed in the definition of other authors. Ravasi and Schultz, for example, see identity as influenced by external perceptions and the search for a favourable image on the one hand (which is pretty close to Bouchikhi's idea of external image), and the features that make a company unique on the other (which is close to the core competences aspect of a company's USP). However, the authors stress that "internal practices may form an equally important foundation for the definition of what is core, enduring and distinctive in the organization". They define internal practices as the "organisational routines and behavioural patterns affecting, for instance, the ways investments are evaluated, products are designed, customers are served, alliances are managed, etc. These practices rest on fundamental cultural assumptions, of which they are the concrete manifestation." So for Ravasi and Schultz' identity is process-oriented (which is close to Lissack's idea of "abilities in the light of context") but also strongly linked to the corporate culture.

The idea of some internal practices, abilities that form the core of a company, also serve as a reminder of the idea of "dynamic capabilities", an issue strategic management currently focuses on. In recent years, some authors pointed out that in situations of quickly changing complex environments, dynamic capabilities are critical. They define dynamic capabilities as the firm's ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments (Teece et al, 1997, page 516, and Eisenhardt/Martin, 2000). Bernhard Katzy also pointed to the issue of dynamic capabilities in an interview we conducted with him, when he said, "The main factors [for robustness] are dynamic capabilities. Dynamic capabilities constitute even a recent research stream in strategic management. It treats the management of change in turbulent environments and especially the managerial capability of decision-making in turbulent environments."

Dynamic capabilities, in these definitions, are mainly concerned with the flexibility and adaptability of an organisation, i.e. the internal practices that make an organisation more flexible by being more adaptable.

In view of the above, the RODEO team therefore defined identity as: *the specific corporate factors that determine (and are manifested in) the crucial internal practices, i.e. the dynamic abilities that can be context-specifically applied*. In this context, dynamic abilities are general context- and time-

independent abilities, which become visible as abilities in a certain context. These abilities make companies more robust by fostering the flexibility/adaptability of it.

THINKING ABOUT *YOUR* ORGANISATIONAL ROBUSTNESS:

Are tools and methods that reflect a human-centred organic view at the heart of your organisation's infrastructure and processes?

Does your organisation follow a business development strategic approach integrated with complexity science principles?

Are people, knowledge and ideas recognised as the prime sources for corporate renewal?

Is there a dedicated daily monitoring and management of performance based on human competencies?

What is Business Development?: *the holistic and continuous process of developing and aligning product/service and market combinations with the organisation's people and competencies sets.*

Business Development (BD) is an interdisciplinary field that combines significant experience in technical and commercial aspects with strategic planning to help establish or improve the business under consideration. Most large companies have a senior manager for business development on staff. For smaller companies, or alternatively those businesses entering new fields but lacking internal expertise, consultants are often used. Business models and business cases may be part of that work. It should include an analysis of the status and conditions as they apply to the customer's business, and recommendations what to do, and when. A well considered strategic approach can help position the client's business favourably in the competitive environment. An important element of BD is that of innovation founded on an active R&D programme.

A key aspect of business development is R&D, itself a subset of innovation. The RODEO approach plays a major role in shaping robust business strategy, and therefore influences business forms, including networks. Dosi (1988) usefully defined innovation as a process that involves, "The search for and discovery, experimentation, development, imitation and adoption of new products, new processes and new organizational set-ups." This definition is particularly helpful because it acknowledges that innovation is not limited to purely technological advances, but embraces social and managerial change. ACOST (1990), "The most important of these (barriers to growth) relate to the problems of remaining competitive as markets grow and mature, and managing the major transitions required to exploit new business opportunities." There are a complex range of factors that determine survival and growth, from internal characteristics through to external trading conditions. Very few firms are likely to experience exponential rates of growth,

or will survive and prosper beyond the early hazardous developmental phases.

BD starts with every potential of a system (company) and analyses the dimension of changes happening over a specific period of time. The results (positive or negative) of these relations, including the degree of equilibrium is expressed by the development of a business. Negative results of the interaction of the systems and therefore the unattained equilibrium leads to reduced performance of the BD. BD aims to realise the full potential of a company, in order to generate benefits for all participants and members over time. BD is understood as being only practicable to a certain extent. These limitations result from the fact that even if there is a concrete defined plan including strategies and ideas by which the development should be realised, unforeseen situations, which influence the BD may still have strong impacts. Deviations from the anticipated and realised BD require adjustments both in the target requirements of the members and in the configuration and handling of the whole process. BD is only ostensibly measurable by consideration of quantifiable measurement categories (turnover, balance sheet, employment figures etc.) BD provides tangible evidence of changes and the long-term benefits by comparing the successes of various companies. BD requires a high degree of entrepreneurial dynamism between the company and its environment. By controlling chances, risks of changes, strengths and weaknesses taking place during the development of a business, it will be able to initiate necessary changes and realise adaptations to the system.

Entrepreneurial dynamism is often characterised by the principle of dynamics, indispensable in corporate management and marked by three elements: 1) An entrepreneurial personality as promoter of dynamics; 2) Benefits and strategic success potentials, which are being developing by a dynamic company; and, 3) The multiplication of business activities, which are brought to bear when making use of the benefits and strategic success potentials. The ideal type process of BD differentiates three stages – how are you focussing on these in your organisation?:

- Internal BD: Pioneer work; Market development phase (Organic growth, including recruitment of personnel and increasing turnover); Diversification phase (New products and services).
- External BD: Acquisition phase (Mergers and Acquisitions); Cooperation phase (Networks, alliances and strategic partnerships).
- Internal and external BD: Restructuring phase (Maturing management structures).

RODEO Scope

In providing a process for robust business development, the RODEO Process specifically focuses on three business areas: Performance Management; Strategy; and Organisation.

We learnt that focus on these three business areas is useful under certain conditions. Performance management, as perceived from a complexity-view, does not focus on rewarding ‘good’ and penalising ‘bad’ behaviour. Mistakes

are part of a learning process and a natural result of making experiences. They are therefore crucial for the survival of the company and should be treated accordingly. Good experiences in terms of results should, in this context, be used to learn, too, i.e. used to train others.

Strategy, from a complexity science perspective, has to be flexible and adaptable to changing conditions. A long-term strategy is needed as a frame in which emergent strategies can form, but this long-term "vision" has to be adapted, just as the mid- and short term ones, to opportunities and threats arising from the environment (internal and external).

Complexity science also challenges organisation structures. From a complexity science perspective, organisational structures should be flexible enough to allow fast adaptations. Networking, internal and external, plays a major role as it is strongly linked to more adaptable organisational structures.

The Vision of the RODEO Project

The vision behind the RODEO project was to explore and create a coherent perception of the modern business organisation, grounded in complexity science. Based on that construct, an integrated approach and accompanying instruments (both methodological and software tools) for business development were proposed and experimented with. The key focus was on achieving adaptability and robustness in turbulent environments. The RODEO team defined “business development” as the holistic and continuous process of developing and aligning products and services and market combinations with the organisation’s people and competency sets.

We related this to three key management disciplines:
Strategy Formulation: formulating how to compete with which value propositions (products and services) in which markets, based on which resources (mainly competencies and people).
Performance Management: monitoring internal and external developments and managing the performance of the organisation within this environment.
Business Organisation Design: conceiving and designing the organisational structures and processes for business development – distributing responsibilities and tasks for developing new products, new services, new competencies and new business concepts.

The RODEO project drew from these three aspects and integrated 6 complexity principles to create the RODEO Process, to meet the business development needs of organisations in multi-enterprise situations operating in so-called ‘turbulent’ environments.

Business Development Grounded in Complexity Science

According to Drucker (1997), one of the main implications of the present economic landscape is that; “The world economy will continue to be highly turbulent and highly competitive, prone to abrupt shifts ...” The goal of the RODEO project was to enable companies to achieve adaptability and robustness in turbulent environments. This raises the problem of how modern

business organisations survive, or by what means can organisations develop in a competitive and sustainable manner, in such turbulent environments. It is clear that there is no generic solution or blueprint for organisational success and longevity. The operating environments are changing continually, and each company is continually faced with different situations. Any answers are therefore time, place and context specific.

The limitations of ‘command and control’ strategies are reflected in the 6 principles of complexity science underpinning the RODEO Process: self-organisation and emergence, diversity, the edge of chaos, history and time, unpredictability, and pattern recognition. The theory of complexity, which originated in natural sciences (Kaufmann, 1995), introduces explanations as to how so-called ‘complex adaptive systems’ behave and adapt, as well as first attempts to transfer these concepts to business organisations (Beinhocker, 1998).

At one time, it was relatively straightforward for managers. There was a ready supply of well-proven methods for strategic planning and business development. Clear and relatively simple financial models worked well. These simple models were based on simplistic assumptions about the mechanical, predictable and linear nature of the organisation, but have proved to be inadequate in the rapidly changing business world.

Given the apparently astonishing rate of change of recent times, the ability to plan and manage the business development of an organisation is considered a strategic competitive advantage, and is not solely about growth in pure economic measures.

The capability to react to complex environments can differentiate between companies that survive in a changing environment, and organisations that disappear. The converse is also true for these enterprises, so an understanding of risk can reveal opportunity. Understanding the implications of risk also presents exceptional opportunities for companies that can manage continuous change and the complexity of their environment.

In line with these needs, the RODEO project has provided a process to enable European organisations to strive for healthy, adaptive business development by increasing their corporate business development capacity. This is based on a view of evolutionary and revolutionary renewal of the organisation’s relationships within multiple networks, structures, products and processes, by integrating complexity science principles. As well as a strategic approach towards Business Development, a human-centred organic view was taken, as people, knowledge and ideas were seen as the prime sources for corporate renewal and growth.

The RODEO Process concentrates on the question "how can complexity science inform robustness in turbulent environments, i.e. how can findings from the studies of complex adaptive systems enable the transformation of companies towards greater robustness in turbulent environments?" This approach thus contrasts traditional organisational structures and processes with a more complexity-oriented view. On the one hand, this means that

companies will have to change their understanding of what an organisation is, namely not a controllable system that can be steered via linear cause-effect relationships, but a living organism made up of interacting agents, that shows unpredictable behaviour and emergent (sometimes unintended) structures, where organisational boundaries are vague and connected to the overall environment, the network of the organisation.

On the other hand, companies that want to become more robust through an approach grounded in complexity science not only have to change their view, but they also need some positive guidelines, principles that help them to successfully attempt the transformation (by means of tools or methods). For the RODEO Process, there are 6 Complexity Principles that the process is grounded in. These principles, explained in detail later on, are: **self-organisation and emergence, diversity, the edge of chaos, history and time, unpredictability, and pattern recognition**.

According to the complexity science implications and the results of expert interviews carried out by the RODEO team, there are no general solutions independent from the context. Solutions have to be developed with respect to and out of the respective situation a company is in. The RODEO Process thus focuses on providing tools and methods to help companies identify their current situation and context, defining the respective future position they want to achieve (and that is suitable for their specific company) and in selecting some tools/methods to support the business transformation process. So the RODEO Process is based on 6 complexity principles and a development process that companies in turbulent environments have to continually go through to become more robust.

A Basic introduction to Complexity Science

Despite much overuse of the term in many disciplines, so far there is no actual, single, unified complexity theory, no sound and complete theoretical construct, but rather, some studies and theories about what might be important about the behaviour of so-called ‘complex adaptive systems’, how ‘complex responsive processes of relating’ work, and what a business development approach grounded in complexity science might look like. So the RODEO Process is based on our specific understanding of some key complexity science principles that we considered most important. This includes some theories about the behaviour of Complex Adaptive Systems (CAS), but also ideas from the theory of Complex Responsive Processes of Relating (CRPR), which is postulated by Ralph Stacey. This theory combines a perspective that acknowledges the work of Mead (1934) on social-psychology, and also incorporates key principles from Complexity Science, emphasising the role of interactions of people and how they constitute the place where self-organisation and emergence takes place. The main aspects we consider crucial in this respect is the role of communication, exchange and knowledge creation in enabling novelty and spontaneous change, and the context these take place in: between people, in conversations.

Zimmerman (2000) defines the three words that describe Complex Adaptive Systems (CAS) in the following way: Complex implies diversity or a great number of connections between a wide variety of elements. Adaptive

suggests the capacity to alter or change or the ability to learn from experience. A system is a set of connected or interdependent agents. An agent may be a person, a molecule, a species, or an organisation among many other things. These agents act based on local knowledge and conditions and are semi-autonomous units that seek to maximise some measure of goodness or fitness by evolving over time. Stacey (2000) adopts a more radical perspective to strategy formation based on complexity that he calls Complex Responsive Processes of Relating (CRPR). Intention emerges in the self-organising process of ordinary conversation between people. Change occurs in novel ways through the presence of sufficient diversity in organising themes. This is expressed in free-flowing conversation in which shadow themes test the boundaries of the legitimate. Managers cannot think of themselves in terms of organisational designers but rather as active participants in a complex process.

The 6 complexity science principles we decided were the crucial ones based on our research, expert interviews and our own first development iterations include self-organisation and emergence, diversity, the edge of chaos, history and time, unpredictability, and pattern recognition. Definitions and implications of these principles for robust business development have been specified by the RODEO team and are found in the following chapters.

CHAPTER 3

THEORY INTO PRACTICE - THE 6 PRINCIPLES

By Carol Webb

The 6 Complexity Principles and the RODEO Industrial Partners

The RODEO team set out on the premise that "in an environment where the future is unpredictable and unimaginable, management becomes a matter of managing change and preparing to change continually. In the theory of complexity, which originated in natural sciences [Kaufmann, 1995], we see preliminary explanations to how complex-adaptive systems behave and adapt, as well as first attempts to transfer these concepts to business organisations [Beinhocker, 1999]. In line with all of the above, the RODEO consortium envisioned to explore and create a coherent perception of the modern business organisation, grounded in complexity theory." The way the concepts of complex adaptive systems were transferred to business organisations on the RODEO project was **through the application of 6 complexity principles and the associated RODEO Process** which made any transfer context specific. The 6 Complexity Principles are:

Self-organisation & Emergence | Diversity | The Edge of Chaos

History & Time | Unpredictability | Pattern Recognition

The way industrial partners learned to perceive their organisations through the use of these 6 complexity principles was in terms of **'Cosmology'; 'Traditional' Management Issues; and Interconnectivity**. Cosmology is a word used in the social sciences to describe someone's 'world view'. It is used in this context to refer to a similar thing, defined for RODEO purposes

according to the emergent themes of perspective, learning and philosophy. Traditional Management Issues covers Concrete Application & Usefulness; Project Management; New Service Development; Problem Solving; Creativity; and Organisational Sense-Making. While Interconnectivity includes Confidence Building & Empowerment; Team Applications; Communication; Fostering Relationships; Networks; Inter-Organisational Sense-Making; and Prospective Inter-Organisational Sense-Making.

How these impacts were felt by the RODEO industrial partners is elaborated further on. First though, is an introduction to the meaning and interpretation of the 6 complexity principles as used in the RODEO Process, starting with ‘self-organisation and emergence’.

CHAPTER 4

PRINCIPLE 1 – SELF-ORGANISATION & EMERGENCE

By Carol Webb

What's emerging? – SELF-ORGANISATION & EMERGENCE

Not everything happens according to plan. In fact, says Guy Browning, Guardian columnist, "The Best way to plan is carefully to write everything down on a piece of paper and then to rip the paper to shreds. This accurately reflects what happens to plans in real life… most people do their planning after the event. This is a lot easier, because you know exactly what happened

and can come up with a very impressive plan that would have made you look terrific had you actually done any of it." [Extract from 'How to Plan' by Guy Browning, in The Guardian Weekend, April 26, 2003, p10.] Why does this ring so true? One explanation can be found in the infinity of connections we have to the world around us. "We live in an environment where a lot of things are happening all the time. People interact with each other, the immediate environment of equipment and things, with the external word of customers, competitors and neighbours. They interact with the patterns and processes of behaviour … in all these interactions, novelty is created, new things happen. We can't predict just what these will be because so much is going on. Who can establish just what caused what? We can call this 'emergence'" [Extract from p169, in "The Leadership Dance", by Richard, N. Knowles – 2002].

And the scary fact is, no-one is in charge of all this. "Neither the messy creative processes nor their outcomes can be planned or intended, because long-term outcomes are truly unknowable at the edge of chaos. In fact, the links between our next actions and their long-term outcomes disappear, so that no one can be in control. This becomes far less anxiety-provoking once we accept it and understand that when a system is held at the edge of disintegration, the consequence is not necessarily randomness and anarchy, because the edge also has an inherent order brought about by redundancy and cooperation. That cooperation does not occur according to some blueprint, some prior intention of the most powerful. It is true empowerment, a bottom-up process in which agents follow their own best self-interest without waiting to be told that they may. Such spontaneous **self-organisation** produces **emergent** strategies; that is, the interaction itself creates patterns that no agent individually intends or can foresee. **Emergence** means that it is not possible to foresee the global outcome of interaction between individuals or to reduce the global pattern to the behaviour of the agents… When you insist on your vision, when you try to stick to your blueprint, when you cling with so much determination to control are you destroying the capacity of your organisation for complex learning? When you expel the surplus resource from your organisation out into the community, have you become more efficient but also so brittle that you cannot survive turbulence? Is there time left for the play and the dialogue without which nothing truly new can happen?" [Extract from, pp15,16, "Complexity and Creativity in Organisations", by Ralph D. Stacey, (1996).]

What's needed in business now is the ability to see that complex systems structure themselves out of themselves, that interacting elements act according to diverse 'rules', and order is created out of chaos. This is the world of self-organisation and emergence, where patterns emerge from interactions, where new qualities arise through particular types of networks, where more highly structured complexity is produced out of many simple components, and where, in organisations, each individual outgrows its usual competencies and new ones continually emerge.

Self-Organisation/Emergence in Robust Organisations

If we think of organisations as complex adaptive systems, it is possible to see how the people in them show self-organising behaviour. Self-organisation

means that the system organises itself, i.e. in scientific terms that the single agents of the system find and create a structure in a 'bottom-up' way, on their own, without having a master-plan or an observational guider telling them how to organise.

Technical elements of self-organisation include: negative and positive feedback loops; decentralized control; structured randomness; and, neighbourhood interactions.

For companies, this can mean that self-organisation happens "when a group of individuals decides what to do, how to do it and when to do it without anyone outside that group telling them what and how to do it" (interview with Eve Mittleton-Kelly, November 2002). In fact, it means that the group doesn't necessarily know or consciously decide to do anything. It is as if something happened as a by-product of getting on with other things.

Research which has tried to discover more about elements in an enabling environment that could maximise the potential of self-organisation indicates that a certain understanding of a company based on trust and respect and the belief in self-organising behaviour is required. This includes the ideas that: mistakes are part of a learning culture (without blame); negative feedback is as important as positive; people should be empowered to take on responsibility for their actions; and, control has to be decentralised. This research also suggests that general guidelines/rules are necessary to let emergence happen, and that people can learn from each other by sharing learning and knowledge, through interactions and conversations with others.

The idea of self-organisation is, of course, closely linked to the notion of emergence. Emergence, as perceived in by the RODEO team in a technical way, is the idea that in complex adaptive systems structure and order, novelty, spontaneity and creativity emerges from the bottom up, out of the self-organising behaviour of their agents, which makes the system itself more than its single parts (Gleich et al 2002).

SPOTTING SELF-ORGANISATION AND EMERGENCE:

Is any single person in command or control of the situation? Not when self-organisation is happening.

Is someone planning and managing the situation? Not when self-organisation is happening.

Is there any obvious hierarchy among the people you are with? Not in terms of the self-organisation that is going on.

Can you easily predict what is going to happen next? Not when things are really self-organising and emerging.

Does the way people are interacting appear to be random? Yes, it often does appear to be that way.

Do you see new stuff emerging from people's interactions with each other? Yes, afterwards you can probably make sense of this more easily.

Could it be that if you were to look on a wide scale there might be some patterns emerging? Yes, if you thought about you would probably be able to see some kind of pattern emerging.

Are people organising themselves without a 'leader'? Yes, when self-organisation is going on people often don't realize it at the time as they are so busy involved in other things.

Is this going on continuously? Yes, absolutely.

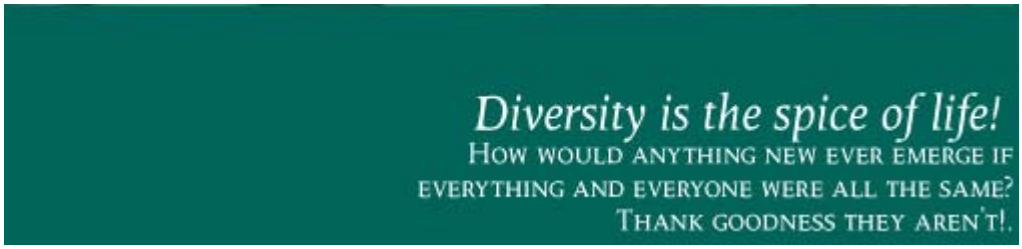
Are people interacting with each other in simple ways? Yes, as well as very complicated ways.

Think of an example of self-organisation and emergence from your own life at home or in the work place, and make a note here:

CHAPTER 5

PRINCIPLE 2 – DIVERSITY

By Carol Webb



Diversity is the spice of life!

Diversity in today's business world is primarily seen as a good thing when something goes wrong (i.e. not according to plan), because it means there is usually another direction to pursue and all is not lost. It's about keeping your options open. The same is true in the natural world. Fritjof Capra writes: "In

ecosystems, the role of diversity is closely connected with the system's network structure. A diverse ecosystem will also be resilient, because it contains many species with overlapping ecological functions than can partially replace one another. When a particular species is destroyed by a severe disturbance so that a link in the network is broken, a diverse community will be able to survive and re-organise itself, because other links in the network can at least partially fulfill the function of the destroyed species. In other words, the more complex the network is, the more complex its pattern of interconnections, the more resilient it will be. In Ecosystems, the complexity of the network is a consequence of its biodiversity, and thus a diverse ecological community is a resilient community, capable of adapting to changing situations. However, diversity is a strategic advantage only if there is a truly vibrant community, sustained by a web of relationships. If the community is fragmented into isolated groups and individuals, diversity can easily become a source of prejudice and friction. But if the community is aware of the interdependence of all its members, diversity will enrich all the relationships and thus enrich the community as a whole, as well as each individual member. In such a community information and ideas flow freely through the entire network, and the diversity of interpretations and learning styles - even the diversity of mistakes - will enrich the entire community." [Extract from "The Web of Life", by Fritjof Capra, 1997, p295]

The potential for enrichment means diversity is the fertilizer of innovation and business development. Brian Arthur, of the Santa Fe Institute (a Mecca for complexity scientists), writes: “Diversity itself provides the fuel for further diversity. Growth in co-evolutionary diversity can be seen in the economy in the way specialized products and processes within the computer industry have proliferated in the last two decades. As modern microprocessors came into existence, they created niches for devices such as memory systems, screen monitors, and bus interfaces that could be connected with them to form useful hardware – computing devices. These, in turn, created a need, or niche, for new operating system software and programming languages, and for software applications. The existence of such hardware and software, in turn, made possible desktop publishing, computer-aided design and manufacturing, electronic mail, shared computer networks, and so on. This created niches for laser printers, engineering-design software and hardware, network servers, modems, and transmission systems. These new devices, in turn, called forth further new microprocessors and system software to drive them. And so, in about two decades, the computer industry has undergone an explosive increase in diversity: from a small number of devices and software to a very large number, as new devices make possible further new devices, and new software products make possible new functions for computers, and these, in turn, call forth further new devices and new software. Of course, we should not forget that as new computer products and functions for computers appear, they are often replacing something else in the economy… And so the increase in diversity in one part of a system may be partially offset by a loss of diversity elsewhere” [W. Brian Arthur (1999), ‘On the Evolution of Complexity’, in ‘Complexity: Metaphors, Models and Reality’, Cowan, G. A., Pines, D., Meltzer, D. Eds., Advanced Book Classics].

In terms of business development at the organisational level, diversity is sought by means of a wider network and a richer variety of employees and network partners. Networks combine the greatest possible variations of diversity. It is this high diversity that creates more possibilities to react flexibly to environmental changes, meaning that the greater the variety within the system, the stronger it is. When there is so much diversity then of course ambiguity and paradox abound, but the advantage is realized when such contradiction is used to create new possibilities to co-evolve with the larger environment.

Diversity and Robust Organisations

Diversity plays a crucial role in anything considered a complex adaptive system (CAS). CAS are technically said to need a diverse set of agents to be successful and to let an effective structure emerge. In companies, this means that the right mix of people is indispensable for innovation and creativity. Self-organising teams cannot work if all team members have the same strengths and weaknesses; it is the combination of different abilities that makes such a system creative, but also robust. A company respecting the principle of diversity will therefore try to combine different variants without trying to level the differences, i.e. it will recognise and respect diversity as a particular asset. It will moreover try to discover diversity and create the potential for discovering it. And it will try to find means to combine diverse variants, i.e. create teams of mixed competencies.

SPOTTING DIVERSITY:

Are differences between people flattened out or leveled? If an organization is making the most of its diversity of employees, activities, and network partners, the differences will probably be emphasized, not flattened.

Does change happen easily? In an organization which is truly rich with diversity, change is happening all the time.

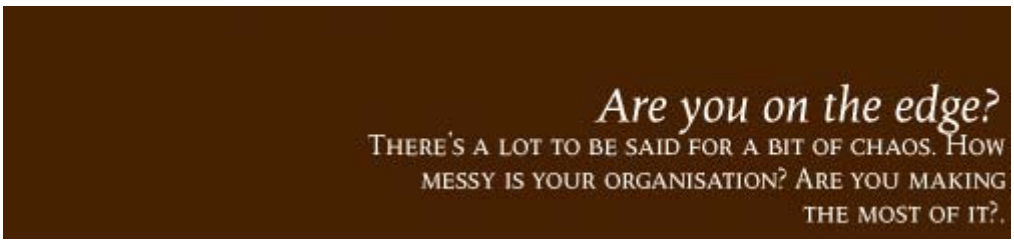
Does the way people interact and change appear flexible? Diversity in and between organizations can mean that a lot of potential flexibility is built in.

Does the 'system' seem strong? If it helps you to refer to an organisation and its network as a system, then it may well seem strong if it is made up of diverse people, relationships, activities and services.

CHAPTER 6

PRINCIPLE 3 – THE EDGE OF CHAOS

By Carol Webb



Are you on the edge? - THE EDGE OF CHAOS

There's an almost magical point, that you can't put your finger on, where stuff really starts to happen. It's a point between chaos and order when creativity and stability fuse, where living systems are at their most inventive, where there is the highest chance that something pretty distinct and unique will emerge. This happens near something called the 'edge of chaos', where there

is a natural transformation from order, into chaos, and then on into new order. But don't be mistaken – this is not somewhere adrenaline junkies can go on holiday. "The **edge of chaos** is a condition, not a location," writes Pascale, "It is a permeable, intermediate state through which order and disorder flow… Moving to the **edge of chaos** creates upheaval but not dissolution. That's why the **edge of chaos** is so important. The edge is not the abyss. It's the sweet pot for productive change."

Complexity scientists, who, among other things, study edge of chaos conditions, love to use analogies from the natural world in their search for understanding. Pascale, who uses the determined and endlessly innovative fire ant to illustrate the meaning of the edge of chaos, is no exception. "The fire ant appears to thrive at the edge of chaos," he says, "When the environment becomes outright hostile (that is, nearer to chaos), surviving colonies strive to rebuild their army of workers, which occasionally triggers warfare between colonies… some fire ant free-for-alls escalate... workers steal rival colonies' eggs and larvae …" Etc, etc. However, importantly, Pascale goes on to say that "Human beings aren't ants, and organisations aren't ant colonies. But when productive agitation runs high, innovation often thrives and startling breakthroughs can come about. This elusive much-sough-after sweet spot is sometimes called 'a burning platform'. The living sciences call it **the edge of chaos**."

"Andy Grove, the Chairman of Intel, has had a long-standing acquaintance with this realm. He embraces it as part of his executive tool kit. Grove recalls: "By the mid-nineties, a PC price war, abetted by the Asian economic crisis, had shaved $100 off the average price of a computer. We had to face the disturbing possibility that the pace at which we could introduce a new microprocessor (premium prices for a year, then priced for the middle market a year later, and finally value priced for the low-end) was collapsing. We had to speed up this cascade. A new product that used to migrate to the bottom of the market over three years needed to get there in 12 to 18 months to retain our competitive edge. As you try and make sense of the new landscape (i.e., formulate the adaptive challenge), I've learned it is important to move the organisation quickly from denial to acceptance of change (i.e., disturb equilibrium). Doing so usually involves 2 phases. First, you must experiment and let chaos reign. That's important because you're not likely to successfully stumble on the answer at the first sign of trouble. Rather, you have to let the business units struggle and watch the dissonance grow in the company (i.e., manage the level of distress). As this unfolds, you enter the second phases of change, which I describe as the Valley of Death (i.e. the edge of chaos). Doing away with established practice and established people - tearing apart before you can put together something new - is not fun. It is wise to refrain from talking too much about where this is all going in the early stage. Talking prematurely about changes that disrupt people's lives and are not truly believed can undermine efforts before you really know what you are doing. But once they are in place (i.e., the adaptive challenge has been met), it is essential for leadership to speak clearly about what the changes mean and what the organisation is going to do. At this point, you are at the other side of the Valley of Death and you can describe the future that lies ahead." [Extract

taken from pages 61-65, of Pascale, R. T., Millemann, M., and Gioja, L. (2000), 'Surfing the Edge of Chaos'.]

The Edge of Chaos and Robust Organisations

The RODEO team have interpreted the edge of chaos as the balance between structure and flexibility a company needs to become robust. In complexity science, the edge of chaos, i.e. the zone between complete stability and complete chaos, is the area, where the system is most productive. This zone, however, is no fixed point, but rather quite a broad scale, a kind of balance, on which companies have to find their ideal position. The RODEO team therefore defined that the notion of the “edge of chaos” is incorporated in all kinds of balance fields that can play a role in a company, such as finding the right balance between exploring and exploiting activities, navigating and enabling management behaviours, etc.

SPOTTING THE EDGE OF CHAOS:

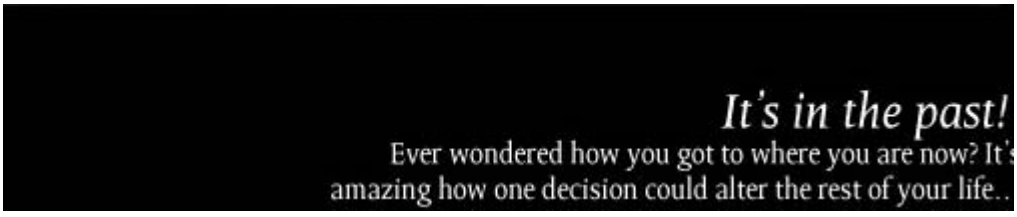
Is there lots of creative type activity going on here? At the edge of chaos, there is.

Are there lots of transitions and changes from one thing to another? Yes, can you spot any?

CHAPTER 7

PRINCIPLE 4 – HISTORY & TIME

By Carol Webb



It's in the past: HISTORY / TIME

"The laws of physics allow history to exist… in principle, history could unfold far more predictably than it does. It need not, in principle, be subject to terrific cataclysms of all sorts… If many historians have searched for gradual trends or cycles as a way of finding meaning and making sense of history, then they were using the wrong tools. These notions arise in equilibrium physics and astronomy. The proper tools are to be found in non-equilibrium physics, which is specifically tuned to understanding things in which history matters… The historian Paul Kennedy published a book entitled *The Rise and Fall of the Great Powers*. In it he laid out the idea that the large-scale historical rhythm of our world is determined by the natural build-up and release of stress in the global network of politics and economics. His view of the dynamics of history leaves little room for the influence of 'great individuals'… It sees individuals as products of their time, having limited freedom to respond in the face of powerful forces". But "The meaning for the individual is more ambiguous. For if the world is organized into a critical state, or something much like it, then even the smallest forces can have tremendous effects. In our social and cultural networks, there can be no isolated act, for our world is designed – not by us, but by the forces of nature – so that even the tiniest of acts will be amplified and registered by the larger world. The individual then, has power, and yet the nature of that power reflects a kind of irreducible existential predicament. If every individual act may ultimately have great consequences, those consequences are almost entirely unforeseeable. Out there right now on some red square in the field of history a grain may be about to fall. Someone trying to bring warring parties to terms may succeed, or may instead spark a conflagration. Someone trying to stir up conflict may usher in a lengthy term of peace. In our world, beginning bear little relationship to endings, and Albert Camus was right: 'All great deeds and all great thoughts have ridiculous beginnings'" [Buchanan, M. (2000) 'Ubiquity: The Science of History', London: Phoenix].

As any manager well knows, the series of decisions which an individual makes from a number of alternatives determine the subsequent path of the individual and also the organisation. Some options are then limited, and others suddenly available in proliferation where before they were not. Complexity Scientist Professor Peter Allen refers to this by using the metaphor of a branching tree, where development, or growth, takes place through a mixture of chance and necessity. When a system, or an organisation, is near to a branching point the Professor says it is relatively unstable, and because of this, small, chance disturbances 'can be decisive in nudging it onto one branch rather than another'. And, he adds, "In this way, we find that history is made up of successive phases of relatively predictable development 'along' a particular branch, separated by moments of instability and real change during which the future of the system is laid down by some rather indeterminate chance events which push it onto one or another branch. We now see the nature of an 'historical accident'" he says [Allen, P. M. (1997) "Cities and Regions as Self-Organising Systems: Models of Complexity", Amsterdam: OPA].

For people in business this means that before any employee makes a decision and takes action there are a number of alternatives - after, it becomes part of history and influences the subsequent options open to the individual and those around him or her. Therefore, organisational histories are unique. Unique histories mean every decision made in the organisation is context specific, and as such organisations have to find their own way, something readily acknowledged by leaders at pharmaceutical giant, Monsanto. "Sometimes people at other companies think they should imitate what we're doing" said one such leader. "The first thing I'd say is, 'Stop looking to us. We followed our path, it has to do with our history and our business." I don't think we are a model for anybody, although I know there are companies who are using us as a model. If we'd had a model, I don't think we would have done as well as we have, because we might have felt constrained to do things in a certain way that didn't fit us. The most important thing is that this is an experiment, an experiment still in progress. ... Because we are in times of unprecedented change, unprecedented discontinuity, you need to keep enough flexibility so that if you face something surprising you can take advantage of it, or recoil from it, whatever is appropriate. I think, because of the way we work, we can do this a lot better than in the past. And my guess is that most organisations would know how to do all this too." [Extract taken from p222-3, chapter 12, 'Monsanto: Transformation of a Chemical Giant', in "Weaving Complexity & Business: Engaging the Soul at Work", by Roger Lewin and Birute Regine., 2000].

History and Time and Robust Organisations

History is an important factor of anything considered a complex adaptive system (CAS). This means that, although the future behaviour of a CAS cannot be extrapolated from the past, the past of this system is still important for its present and future position. For the RODEO Process, this has been interpreted to mean that companies should be aware of their past and make use of their experiences. Good experiences, however, should not be treated as "best practice" cases that can be copied from the past and into future successes, but as a kind of adaptable input that can help in making decisions, to "ask the right questions". Bad experiences should not be considered "failures" that nobody talks about and that end up as a kind of bad stigma attached to the people who made them, but as part of a learning process that helps the company to be more robust in the future.

SPOTTING FACTORS RELATING TO HISTORY & TIME:

Can you go back in time and change something? Not unless you have a time machine in your office! Not many managers have one of those.

Have decisions been made that have brought you and your organisation to where you are now? Of course

Do you know what those decisions were and who made them? Maybe, maybe not!

CHAPTER 8

PRINCIPLE 5 – UNPREDICTABILITY

By Carol Webb

You never know what you are going to get!
CAN YOU SEE EVERYTHING COMING YOUR WAY?

You never know what you are going to get! UNPREDICTABILITY - THE FUTURE

Due to the complicated interconnectedness of everything, it's very difficult to foresee or to control behavior of everything going on in a networked environment. Small things in obscure places are continually reacting to impulses from outside or inside the network. These reactions ricochet throughout the network and have a system-wide effect so that in the end, no-one knows the real root cause of these effects. In a similar way, all business organisations exist within their own environment and they are also part of that environment, and as their environment changes they need to ensure best fit. But when they change, they change their environment too. In a turbulent business environment this can lead to increased feelings of uncertainty. This is because, "Although we all do our best to foresee important consequences, there is widespread acknowledgement that this is extraordinarily hard in times of dramatic change."

"The information revolution provides excellent examples... Some of the most famous stories of mistaken foresight centre on managers and board members at companies like IBM and Intel who were unable to grasp the world-changing potential of their own products. IBM leaders once thought a handful of computers would suffice for the entire world. The Intel board of directors discouraged the first proposals to develop a microprocessor. The National Science Foundation has remarked that its panel of distinguished information technology scientists and engineers is consistent in its unwillingness to predict the future (New York Times, 1997). Efforts of the Justice Department to redress the consequences of Microsoft Corporation's monopoly are hampered by the inability of experts to say what operating systems might become. As Andrew Pollack said, "The gears of the digital revolution [are] turning faster than the wheels of justice" (Pollack, 1998). Some industry leaders were frank enough to say - two years after the deluge - that they saw the first effective Web browser, Mosaic, as an inconsequential toy (Norman, 1997). As we write, that experience of the unanticipated World Wide Web explosion is fresh in our memories. In the information revolution, there are clearly strong limits on our ability to foresee what is to come." [Extract taken from pages 11-12 of Axelrod, R, and Cohen, M. D. (1999), "Harnessing Complexity; Organisational Implications of a Scientific Frontier."]

So where does this leave us? Professor Peter Allen responds by saying: "…study and understand the processes that led to the present situation. That understanding will always be incomplete and imperfect, but, nevertheless will be the best basis that we have on which to explore possible futures. The purpose of our models is not to predict the future, since as we have seen feedback mechanisms can amplify even very small events, through an instability, and lead eventually to a re-structuring of the system. However, by exploring the stability of the system… the possible instabilities can be explored considerably, and in this way possible futures can be 'tried out' to some extent. Instead of thinking that a failure to predict is a negative result, we should instead understand that it is the very fact that the future is not

determined that offers us the possibility of intervening, and of affecting the outcome" [Allen, P. M. (1997) "Cities and Regions as Self-Organising Systems: Models of Complexity", Amsterdam: OPA].

Unpredictability and Robust Organisations

Unpredictability is a said to be a key feature of complex adaptive system (CAS) behaviour. The notion of unpredictability implies that the development of a CAS cannot be foreseen, i.e. not extrapolated from past behaviour and not calculated on the basis of a linear cause-effect relationship (which has been described as the "butterfly effect").

Technically, for agents in a system like a company, this means that they should not only be aware of the potential unpredictability of their organisation as a whole, but also of the unpredictability of the impacts of their actions on others and the whole system. Small changes or minor events can kick-off a whole range of effects nobody could foresee, and companies should not only accept this as a reality, but also see the positive sides of this, the opportunities this offers. If small changes can have large impacts, you maybe do not need a large change process to enable new structures; if unpredictability and thus uncertainty are not a threat but also a chance, then turbulence itself may be a source of opportunities.

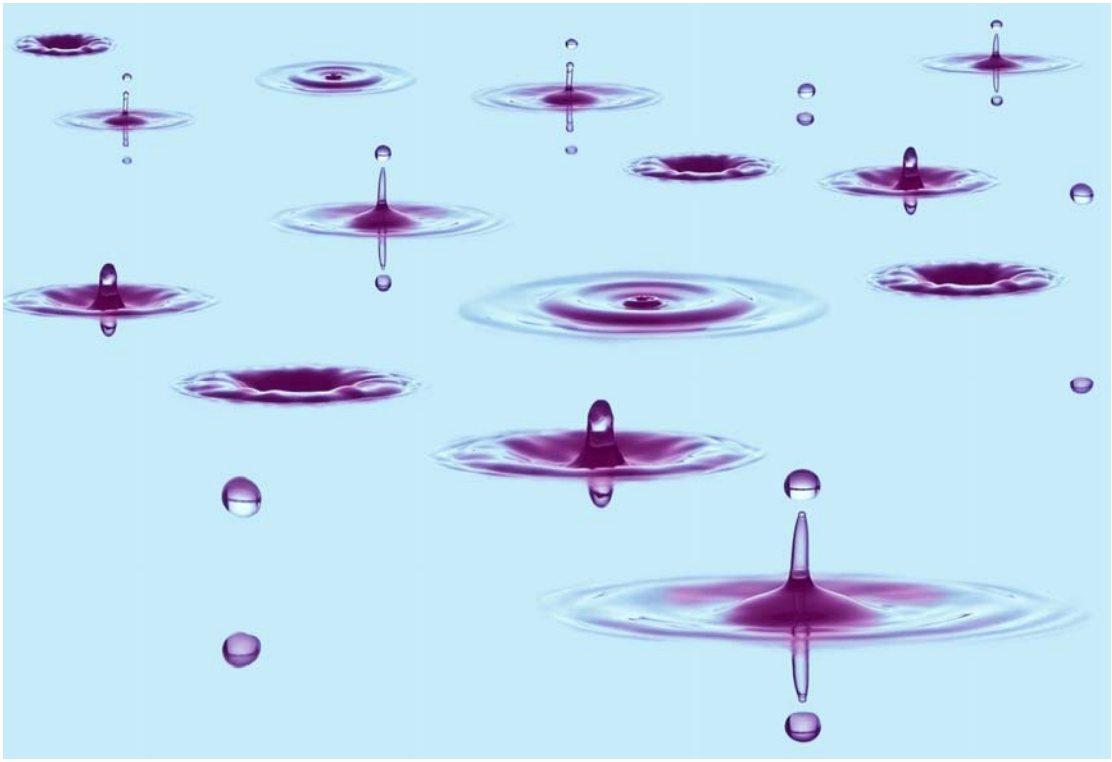
SPOTTING UNPREDICTABILITY – a contradiction in terms:

Is order determined by an elite group? Not when unpredictability comes your way.
Is anyone trying to forecast or control behavior? Not in reference to unpredictability, it just isn't possible. People try, but there are limits.
Are any actions isolated? Never.
Can you see interlinked groups or networks with lots of people that are acting and reacting among each other? If you look back in time after something unpredicted happened, it is always the case.
If something happens in one place do you see consequences elsewhere? Maybe not obvious ones, but they are there.
When one thing changes does everything else change too? To a certain extent, other things do change, yes, and then this changes the first thing that changed, if you can ever say there was a 'first thing'.

CHAPTER 9

PRINCIPLE 6 – PATTERN RECOGNITION

By Carol Webb



Do you see a pattern? - PATTERN RECOGNITION

Organisations are very complex things, packed full of rich interconnections between a diverse range of elements. The ways people in organisations connect or relate to each other is critical to the survival of the organisation - from these connections and interactions patterns are formed, meaning that the relationships between people are often more important than the actual people themselves. Interestingly, self-organised, living networks always show similar patterns, for example, the ways in which people group together in different areas at different times for different purposes – the reasons and

nature of their grouping may always be different, but the fact that they group for some reason is a similar pattern that happens again and again – so grouping is a pattern. The more dynamic the system is though, the more unpredictable patterns may develop. In edge of chaos conditions change does not follow a linear path, so small changes can be amplified, and produce exponential change. Novel, emergent order arises through cycles of iteration in which a pattern of activity, defined by rules or regularities, is repeated over and over again, giving rise in coherent order. Outcomes are produced by different historical events and unique interactions. Through feedback loops (positive and negative) incidences may produce an unpredictable resonance; the chaotic state has a distinctive pattern to the fluctuations in variables – the pattern changes as order begins to emerge from chaos.

Management theorist and consultant, Ralph Stacey explains, "Chaotic behavior has an overall, qualitative pattern to it, within which specific outcomes are random… for example, there is a category we call snowflakes, but within that category each individual snowflake pattern is different. Each snowflake is clearly recognizable as such, but it is also different from all the others because it is a record of its history as it fell to the earth. As it did so, tiny differences in its exposure to temperature and air impurities, compared to nearby snowflakes, were amplified into different patterns… when behavior is chaotic, there is an important distinction between a category and the individuals constituting it. The individuals are not all the same, they are only similar enough to warrant inclusion in the category. We can then talk about history repeating itself and yet always being different. To see how this relates to the world of business, consider how competitive advantage is built up in certain geographic locations. Common patterns, at a qualitative level, can be detected in the development of businesses around certain education institutions. Research centres of excellence in micro electronics and information technology and Stanford and Berkeley, together with the availability of skilled labour, played an important part in the development of Silicon valley in California. The availability of advanced technology made this an attractive location for electronics manufacturers in the early stages of that industry's development. These businesses in turn attracted component suppliers and other support companies. What we can observe is a feedback process through which a particular constellation of industries is built up to provide a particular set of competitive advantages. A similar process can be observed around Cambridge in the UK… Similar patterns of geographic development in fashion clothing and shoes can be observed in northern Italy around Milan. The process is the same. Some initial advantage attracts a small cluster of companies. Through feedback, support industries are attracted and so the pattern develops. We can detect and recognize these patterns of geographic economic development, but their specific form is unpredictable, depending to a significant extent on chance… We can recognize geographical patterns of economic development as we become involved in them, but we cannot predict how these patterns will evolve… the pattern that emerges depends on many escalating small events. The 'hidden' pattern is therefore the essential feature of the category." [Extract from p67-9, in "Managing Chaos", by R, D, Stacey, 1992.]

Pattern Recognition and Robust Organisations

Technically, it is said that complex adaptive system (CAS) behaviour shows patterns. These patterns can, for example, be observed in a flock of birds or the complex structures of bee hives. Human beings have a natural urge to identify patterns in the evolving of complex systems, which can be helpful but also dangerous in the corporate context (because the human brain tries to identify patterns even if there no patterns). In companies, pattern recognition implies that emergent patterns, such as informal organisation and communication structures, can be observed and made use of. These structures challenge the official, planned organisation, show its deficits and offer possible starting points for improving the system, by, for example, incorporating a “shadow system”, or informal system, into the formal one.

SPOTTING PATTERNS:

Can you see direct and proportional links of cause and effect? Not really.
Are people and groups really linking in random ways? Not random, although they may appear to be.
Are small numbers of people loosely coupled to others? Yes, if you look for this kind of pattern, you will find it.
Are small changes amplified? They can be.
Can you see big effects coming from small changes? Sometimes.
Can you see patterns of activity being repeated over and over again? If you look properly, yes.

Chapter 10

THE IMPACT OF THE 6 COMPLEXITY PRINCIPLES IN ACTION

By Carol Webb

This chapter outlines some of the key findings of RODEO industrial partner experiences of the 6 complexity principles. As mentioned previously, the way the concepts of complexity science were transferred to business organisations on the RODEO project was **through the application of 6 complexity principles and the associated RODEO Process** which made any transfer context specific. As just seen, the 6 Complexity Principles are:

Self-organisation & Emergence | Diversity | The Edge of Chaos

History & Time | Unpredictability | Pattern Recognition

The way industrial partners learned to perceive their organisations through the use of these 6 complexity principles was in terms of **'Cosmology'; 'Traditional' Management Issues; and Interconnectivity**. Cosmology is a word used in the social sciences to describe someone's 'world view'. It is used in this context to refer to a similar thing, defined for RODEO purposes according to the emergent themes of perspective, learning and philosophy. Traditional Management Issues covers Concrete Application & Usefulness; Project Management; New Service Development; Problem Solving; Creativity; and Organisational Sense-Making. While Interconnectivity includes Confidence Building & Empowerment; Team Applications; Communication;

Fostering Relationships; Networks; Inter-Organisational Sense-Making; and Prospective Inter-Organisational Sense-Making. How these impacts were felt by the RODEO industrial partners is elaborated below.

References in parentheses (such as (CS1)) following key statements, refer to the case study in which more information and context can be found, e.g. (CS1) means Case Study 1, which can be found in a later chapter of this book.

<u>Cosmology:</u> Perspective, Learning, and Philosophy

1. **Perspective:** The 6 principles made people aware of a different kind of reality (CS1) and provided a very different view from that already existing (CS3) as well as a point of view in cases where before people felt they didn't have one (CS1). This perspective provided a metaphorical 'picture' of complexity (CS8), a picture which depicted something 'simple, yet complex', where there was perceived value in transforming complexity into 'things which are very simple' (CS1). In this way this perspective offered individuals another way of looking at 'chaos' (CS8). The 6 principles provided a new lens by bringing the language to describe processes of emergence in their own context (CS1). They generated personal insight about self-organisation implying the importance of having room and time for things to flow together naturally, and generated understanding at the management level (CS7). They created a substantial impact on the thinking of one company's management (CS6).

2. **Learning:** Learning about the 6 principles presented people with value in knowledge and understanding (CS1, CS3), creating a link between theory and practice (CS2), and generating insight on new implications of theory for management (CS8). Taking in knowledge about the 6 principles created the awareness of a learning process being initiated (CS3), which was developed through aroused curiosity caused by the idea that there were more than 6 principles (CS1). Beginning this learning process generated enthusiasm to facilitate understanding and awareness of the 6 principles in individual contexts and developed understanding of the context of an organisational frame and allowed actions of a learning community to begin within it (CS1). For managers this led to recognition of the need to have experimentation space and to make sense of such open-ended possibilities as those offered by the 6 principles (CS2). This learning process initiated by the 6 principles generated insight into the importance of time needed to continue the learning and sense-making process, in addition to generating individual learning concerning recognition of when self-organisation was not only significant but also necessary to somehow initiate in the absence of clear leadership or direction (CS3).

3. **Philosophy:** The 6 principles generated insight on the difference between the personal philosophies of individuals and those of others (CS2). Having learned about them and having begun to see with the different perspective offered by them, differences between those who see things in a perspective limited by a rational, linear way of thinking, become readily apparent to those who then find they have the added ability to think with a perspective that 'has

nothing to do with usual business culture and values' (CS1). This enabled some people to accept that 'chaos is normal' (CS4), and created resonance for people with real life (CS3). It confirmed the assumption for some that human beings are complex and that this must be addressed in business, in addition to generating insight on the similarities between organisations and human beings (CS2). A type of management philosophy has developed out of the learning and perspective offered by the 6 principles. The effects of this have been felt in terms of becoming more 'open-minded' (CS3, CS7), and now having the ability to step back from an overly controlling position (CS3). Results of this change in management philosophy have been experienced in terms of reduced personal stress and increased personal relaxedness in circumstances characterised by uncertainty or turbulence (CS3). At the same time this philosophy has generated self-awareness of the importance of caring about a situation characterised by uncertainty or turbulence enough to bring positive things to it, but which in turn generated awareness of personal limitations in a bigger environment where the individual cannot possibly be entirely in control (CS3).

'<u>Traditional' Management Issues:</u> Concrete Application & Usefulness; Project Management; New Service Development; Problem Solving; Creativity; Organisational Sense-Making

1. **Concrete Application & Usefulness:** Having integrated the 6 principles into personal management philosophies, the need was perceived to actually use the 6 principles in a pragmatic way (CS1). The learning and change of perspective generated a personal and strong impact on management (CS8). This left people feeling as though they could adapt the 6 principles to other purposes (CS1), and created insights as to how to 'use complexity' (CS3) and translate it into something concrete and practical (CS1). Insight was generated as to how the 6 principles could be used as an approach in-company and potential synergy between outputs of RODEO and Symphony (another EU project) was seen (CS1). The 6 principles appeared to offer usefulness to networked SMEs and confirmed the value in using complexity in daily business as a psychologist (CS2). They generated personal insight on the difficulties of facilitating self-organisation in the company (CS7) and generated curiosity in how complexity theory could serve management and strategising activities (CS8).

2. **Project Management:** Integrating knowledge and learning about the principles in the context of practical application generated insight on how to use them in connection with standards already in use in management and leadership (CS8). The 6 principles generated insight in the value of recognising complex phenomena without having to necessarily control it (CS3). This generated recognition of the 6 principles in project management contexts lacking strong decision-making and planning leadership and created comfortableness in the lack of strong decision-making and planning leadership and acceptance of such a situation as a positive experience (CS1). This perspective created the feeling that it was a safe environment for this to occur without the normal stresses associated with such an approach (CS1).

Understanding the perspective offered by the 6 principles generated appreciation of unpredictability and self-organisation as being needed to work effectively in some circumstances, as well as generating insight into the need to work on many things but also to be able to spontaneously change, adapt and re-organise (CS5). This created awareness of value in retrospective sense-making in reference to making plans and the realisation that making plans are a starting point but not the end point (CS5). Problems identified in these terms include difficulties in communicating implications on planning to people accustomed to highly organised and very structured environments of work carried out under a more linear management philosophy (CS5). This generated insight on frustrations in talking to clients about implications on planning (CS5).

3. **New Service Development:** On another level, the 6 principles offered a way to frame thinking about the construction of a new company in terms of historicity, diversity, and the edge of chaos (CS2), and also a way to retrospectively sense-make about an old project (CS2). The 6 Principles for one RODEO representative (CS1) created a vocabulary to articulate the development of a new company service and business field. This was aided by the generation of insight into significant historical and time based aspects of the relevance of the service. The 6 principles facilitated retrospective sense-making on dynamic circumstances and highlighted the importance of conversations between the people involved, as well as the importance of open objectives and processes and organisational slack in terms of money and time. The 6 principles therefore generated retrospective insight on the possibility of an open way to facilitate the emergence of a new meta-competence, the importance of having a clear 'frame', network support, and created the ability to 'feel' intuitively when competencies are emerging.

4. **Problem Solving:** The 6 Principles demonstrated that there is not one solution, but an approach to adapt to each situation (CS4). For one RODEO representative (CS1) problem-solving activities benefited greatly from the addition of the 6 principles to his other methods and approaches. He generated the ability to use the principles as an approach when he has a challenge and the solution cannot be seen. The principles provided another perspective from which to see problems and challenges, as a different way to see when other methods and approaches fail. This highlighted the importance of integrating such a process into other methods and approaches.

5. **Creativity:** The 6 principles generated insight on new ideas and development of new products (CS8). For one company (CS5) they also highlighted the importance of employee diversity in terms of maximising potential creative output on projects, and generated insight on the need for balance between structure, stability and the necessity of creative environments in an innovation department. In turn this generated insight about the need of a certain amount of unpredictability in order to generate novel project outputs and elucidated more about the meaning of creativity (things are emerging and self-organising in an unpredictable way along the duration of projects). The 6 principles created understanding that communication of the implications on the creative process is difficult and generated the insight that in order to understand the

creative process, you really have to experience it, or to simply communicate less.

6. **Organisational Sense-Making:** In terms of organisational sense-making, the 6 principles confirmed the relevance of 'using' complexity in organisations (CS2). They generated insight for the person as an employee and their life in the company (CS2) and generated insight on their relevance at the individual and organisational level (CS3). At this level the 6 principles created the ability to articulate that which is sometimes perceived as complex and the ability to put names/labels on complex phenomena (CS3). This generated insight into the way things were organised in the company (CS1) and offered the experience of group dynamics when interpreted collectively as well as the ability to understand and articulate organisational dynamics (CS2).

   The 6 principles facilitated articulation of recent changes in the organisation (CS5), and generated understanding and sense-making of longer term history (CS7). They created awareness of emerging competences (CS8) and the recognition of key phases of work and business patterns, and the identification of relationships between these (CS3). This facilitated recognition of the impact on the business and the organisation and generated insight into space and time in order to define new ways of doing things in organisations (CS2). The principles generated understanding of different patterns and different needs/modes at times of implementation (CS3) and generated insight into the problem of organisational design (CS2).

<u>Interconnectivity</u>: Confidence Building & Empowerment; Team Applications; Communication; Fostering Relationships; Networks; Inter-Organisational Sense-Making; Prospective Inter-Organisational Sense-Making

1. **Confidence Building and Empowerment:** The 6 principles gave value in the shared practical experience offered by the Complexity Experience workshop game (elaborated in a later chapter), which was seen as a short, practical, positive experience in a company, complex environment. Some employees (CS1) interpreted the value of this in terms of demonstrating that a practical, positive experience could actually be had in a complex environment. The experience enabled each participant to maximise their own potential and diversity in a network with others after having a shared point of reference from which to articulate it. The principles were thought of in this context as providing a key to autonomy through interactions. The principles built confidence among employees (CS1) and generated insight for the person in terms of their own wider life (CS2).

2. **Team Applications:** The 6 principles were seen as a very relevant input to support team dynamics – their impact was described as, 'very important, very focussed, very powerful, and apparently complete' (CS1). Understanding them in the context of a group activity allowed participants to question leadership and teamwork roles and structure (CS1) and confirmed the relevance of the application of complexity in teams (CS2).

3. **Communication:** The 6 principles generated insights on communication problems between departments where there was a lack of common language and incumbent stress and confusion (CS5). The principles generated insight of significant patterns repeating over time in terms of communication problems between the departments in question and this understanding generated the desire to act on the problems. On the other hand they also facilitated appreciation of diversity between departments.

4. **Fostering Relationships:** The 6 principles facilitated a shared experience at the level of different companies participating together, who benefited from the shared perspective by being enabled to be more interactive with each other (CS1). In these terms, learning about the 6 principles together created common ground between hitherto unknown people (CS1). At the level of the Swiss partners' own interactions with each other on the RODEO project, they felt similar things. The principles articulated their experience in this context and generated appreciation of diversity at the consortium level as well as at the Swiss partner level (CS1). The principles generated appreciation of paradoxical complimentarity between the Swiss as practitioners and facilitators for each other (CS1). The principles created a shared point of reference for people together and offered a way to construct a network out of and based on trust, which initiated a community between the Swiss IPs (CS2). Because the principles generated insight in terms of interactions with the other Swiss IPs this facilitated growth of Swiss IP relationships with each other, which in turn served to generated a feeling of importance of Swiss IP relationships (CS3, CS4).

5. **Networks:** In terms of networks, the 6 principles offered a way to impact a network beyond the organisation, generating insight into organisational network strength and confidence in the robustness and independence of the business network (CS2). This also had the effect of reinforcing a need to feel that a network is robust (CS2). The principles facilitated common understanding and work on business patterns to emerge as something very clearly defined in the context of networks (CS4).

6. **Inter-Organisational Sense-Making:** The 6 principles facilitated identification of signals from the market by means of increased awareness of patterns (CS8). The principles created an appreciation of how the organisation fitted into a bigger picture at the national level (CS7). They also facilitated group sense-making discussions and thinking to be developed with the other Swiss partners (CS3). The principles generated the ability to articulate the Swiss IPs previous and current experiences (CS2) and generated insight into their business patterns, which created the ability to define relevant business patterns between themselves and the other Swiss (CS3). This in turn facilitated the realisation that organisations can have similar yet different patterns and created awareness of the significance of being in a flow of time corresponding to other organisations' patterns (CS3). In addition the principles created awareness of the potential for different organisations to demonstrate different patterns which are also similar and overlap in different ways when working together and highlighted implications for management in terms of significance of patterns within and between a network (CS3).

7. **Prospective Inter-Organisational Sense-Making:** The principles generated insight on the external business environment where patterns are observed and felt to indicate future possibilities (CS7). Among the Swiss they generated the ability to articulate the Swiss IPs future plans together (CS4) and to formulate plans together as to how to introduce their inter-organisational learning at the wider Swiss level (CS2, CS4).

   The next part of this book shows how the 6 complexity principles were integrated into the RODEO Process, and the RODEO Process itself is introduced and described.

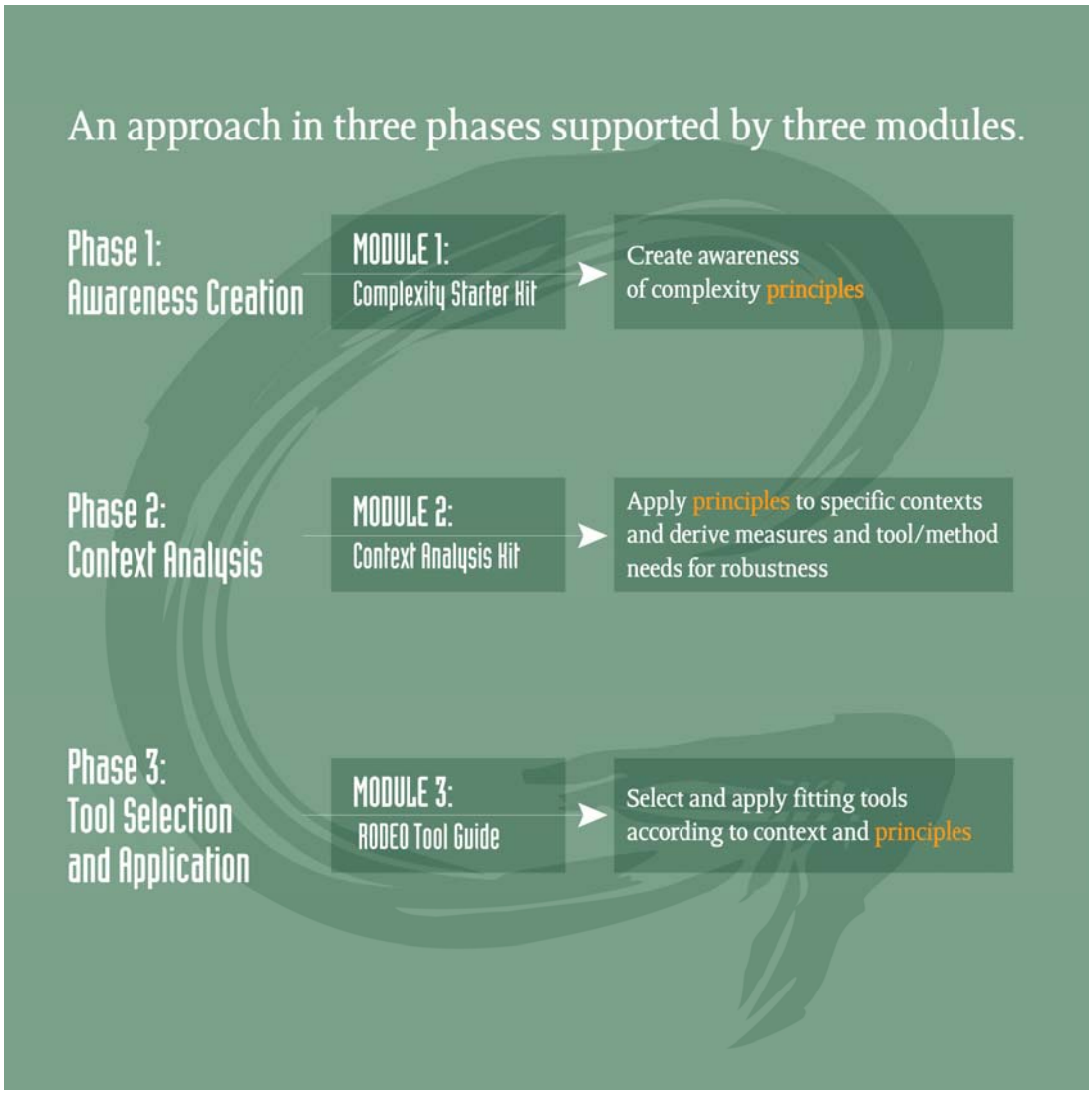
PART 2

THE RODEO PROCESS

Following the previous introduction to the 6 complexity principles, this part of the book elaborates how the objectives of the RODEO Process integrated these principles in terms of helping businesses confront turbulence by developing in a robust way, and explains the thinking behind the design of the RODEO Process.

Following this, the RODEO Process itself is described in detail. This then includes a description and explanation of the thinking behind the Starter Kit, the Context Analysis Kit, and the Tool Guide. These sections can also be considered as a facilitator guide, and facilitator recommendations follow.

The tool guide also comprises two additional RODEO Process tools: The CompetencyDaq and the Opportunity Exploration Kit. These are described as well.



CHAPTER 11

THE PROCESS & HOW IT WAS DEVELOPED

By Alex Bading, Dorothee Frielingsdorf, Carol Webb and Liza Wohlfart

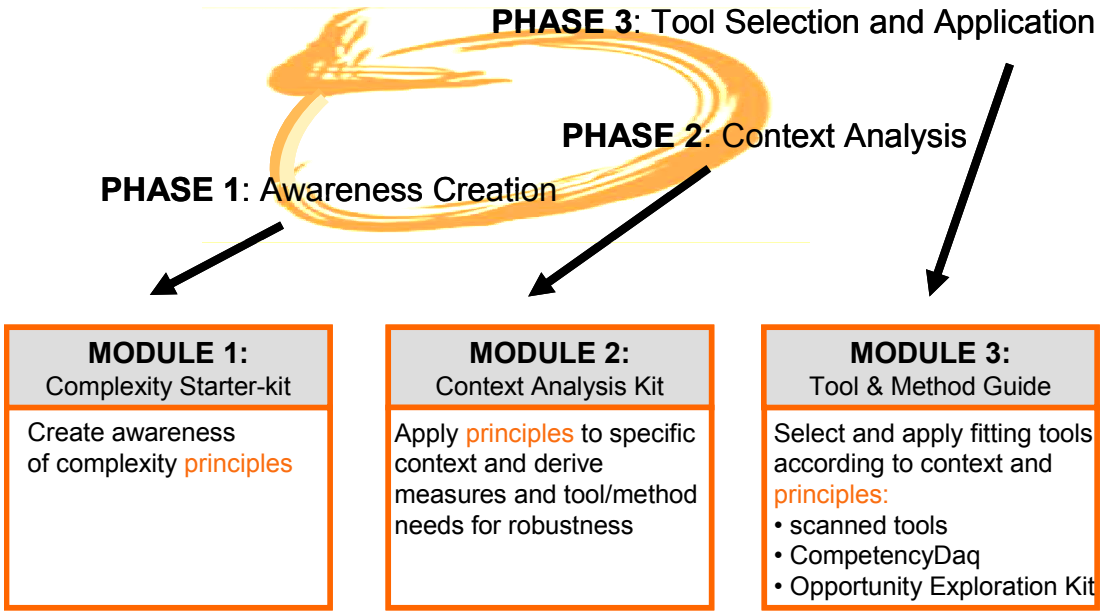
The RODEO Process

The RODEO Process has the main objective to make the 6 complexity science principles understandable, accessible and applicable for companies to support ongoing robust business development (RBD) in turbulent environments.

Phases and Modules include: Creating an awareness of 6 complexity principles; Finding approaches that fit to the specific context of the organisation; Assisting companies in finding their own way by applying a specific selection of tools and methods.

Features of the RODEO Process include: Initiating a continuous learning process; and, working with challenges related to turbulence.

The following diagram makes this clear:



Process Overview

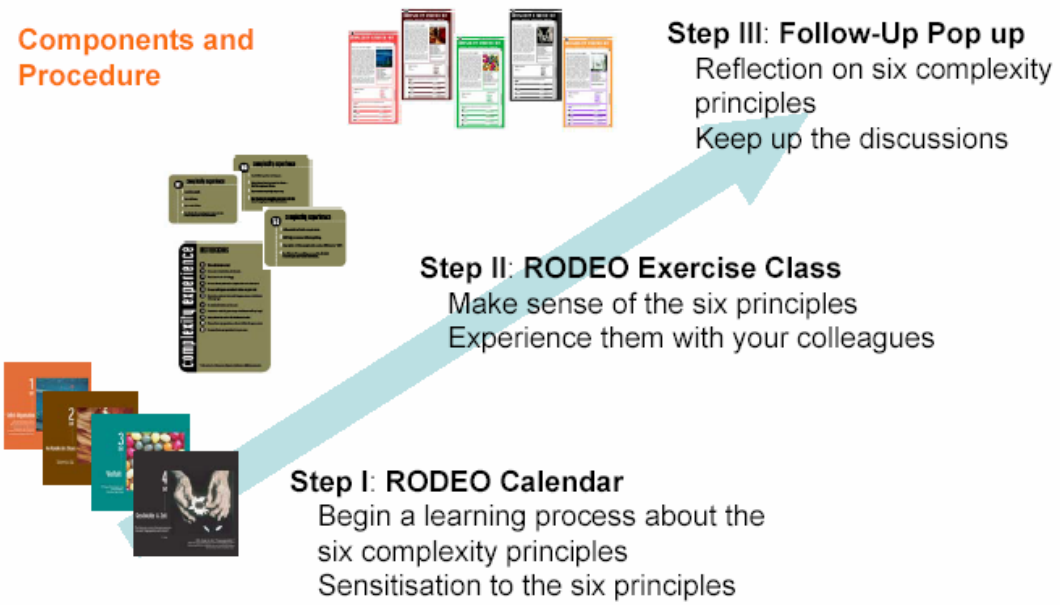
The RODEO Process was designed with the aim to help companies gain a view of their organisation inspired by the 6 complexity principles, and in turn to become more robust. The way this is done by the RODEO Process is by a method of transformation based on the 6 complexity principles. This process is enabled by the Process in three steps:

1. **Phase 1**: Awareness creation,
2. **Phase 2**: Context analysis (Turbulence check and robustness check)
3. **Phase 3**: Tools selection and application

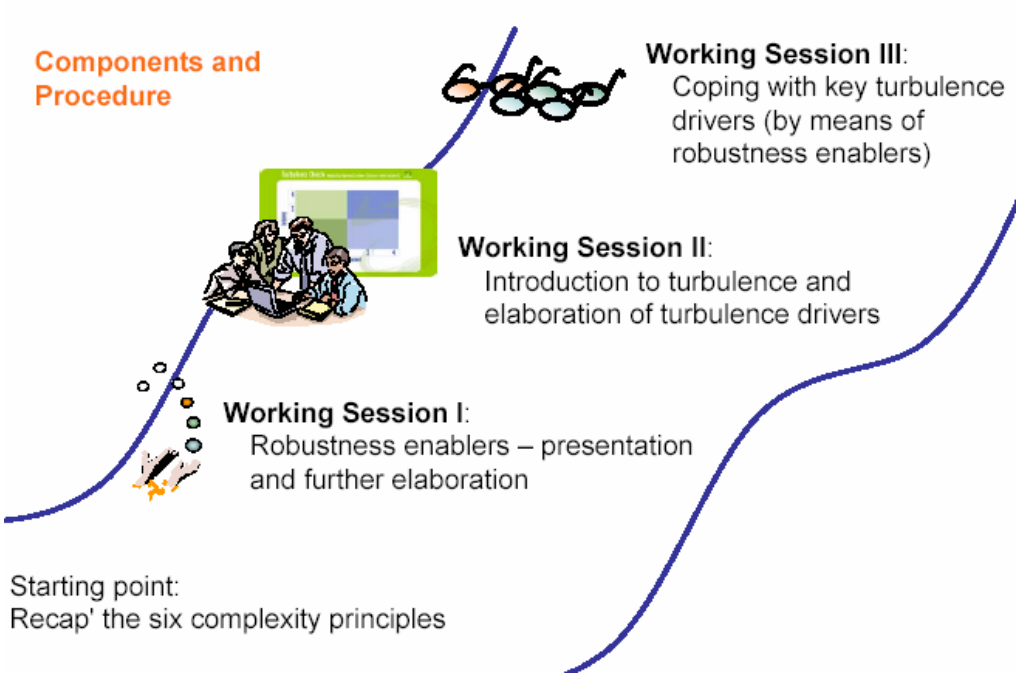
These steps are supported by three individual modules, namely:

- **MODULE 1**: The Complexity Starter-kit
- **MODULE 2**: The Context Analysis Kit, and
- **MODULE 3**: The RODEO Tool & Method Guide.

MODULE 1 allows companies to learn about and understand the 6 complexity principles by the means of the *RODEO Calendar*, a *Complexity Exercise Class and Experience Game,* and the *Follow-Up Pop-up Tool*.



MODULE 2 allows companies to analyse their current robustness in order to identify (with respect to the turbulence of their environment) necessary measures and tools for improving it.



MODULE 3 provides a range of methods that could potentially support the implementation of necessary changes in companies as a result of the indications given by MODULE 2 in the areas strategy, organisation design, and performance relating specifically to HR, forecasting and identity. In order to build the RODEO Tool & Method Guide existing tools were scanned regarding their suitability for the RODEO context. During this scanning process some gaps were identified, which lead to the development of two further methods and tools as part of MODULE 3. These are:

- CompetencyDaq
- The Opportunity Exploration Kit

Designing the Process

In defining and selecting the potential product concepts and tools developed for the RODEO Process, the RODEO consortium paid respect to the key factors which came up during the course of the project. These factors include the 6 complexity principles. In addition, organisational robustness has remained the primary objective of the project. Another influential factor has included the business areas the project concentrates on, which are “strategy formation”, “organisation design” and “human resources”. These factors have therefore influenced the design of the RODEO Process. The way these factors impacted on the design of the RODEO process is described below.

The 6 Complexity Principles

Self-Organisation/Emergence: the concept of self-organisation was said to be incorporated in parts of the process if it could be seen to enable negative and positive feedback of other agents, people or organisations, or if it fosters decentralised control and neighbourhood interactions – thereby helping to create an enabling environment.

Edge of Chaos: the principle of “the edge of chaos” was said to be incorporated in the parts of the process if it supports the balancing of important but opposing factors, and/or helps to foster the idea that the optimal position is not one of extremes, but a certain position of balance. The way it was seen to be advantageous to the process was if it was seen to help to find the “edge”.

Diversity: this principle was said to be incorporated into the process if it helped companies to respect diversity, to discover it and/or to foster it. The aim was to thereby create the right mix of competencies and the environment that makes this mix work.

History and Time: this principle was said to be incorporated into the process if it somehow referenced or included a notion of the past. The aim of inclusion was to help companies to make use of their past experiences and their past identity, while preventing them from forecasting by means of extrapolation on past behaviour or success.

Unpredictability: this principle was said to be incorporated into the process if it was done in a way to help people to understand the unpredictability of the company’s development and the unpredictability of the impacts of their behaviour. The intention of this was to help them to find ways to deal with or accept this. Moreover it was felt it could help them to understand that uncertainty is a natural thing, something they have to live with and can make use of.

Pattern recognition: this principle was said to be incorporated into the process if it helped companies to identify patterns of system behaviour. The aim of inclusion was to support companies in recognising emerging patterns, such as informal organisation and communication structures, and in making use of them.

Robustness

Flexibility/adaptability: in aiming to incorporate flexibility-enabling tools in the process, it was intended that this would help companies to be more flexible, i.e. to quickly react strategically and to create robust organisational structures that are flexible enough to adapt to changes.

Forecasting: this was considered when designing the RODEO process in that methods/tools support forecasting or help companies to get an overview on the forecasting they are doing and the things they cannot forecast (uncertainty).

Sense of Identity: by incorporating in the process the idea of a “sense of identity” it was hoped companies would be helped to identify and make use of their identity

Business Areas

Strategy formation: In designing the process with strategy in mind, the aim was that any strategy orientated tools/methods should help companies to set up and pursue long- and short-term strategies suitable for turbulent environments.

Organisation design: Keeping the area of organisation as a high priority was done when designing the RODEO Process to help companies to find suitable organisational structures and/or to implement them.

Human resources: The incorporation of ideas supporting human resources tools/concepts applicable to turbulent environments was done to enable companies to manage their corporate performance adaptively and to manage human performance in a way that is grounded in complexity science.

Research path of RODEO

The RODEO Process, as well as the accompanying tools and methods, has been developed on the basis of two main sources: an extensive literature review, and expert interviews. The literature review focused on the state-of-the-art in strategy formation, organisation design and performance management as well as in complexity science. Questions and assumptions arising from this review were then challenged in interviews with experts in theory (e.g. strategists, complexity scientists) and practice (representatives of companies with innovative robust structures and strategies), and a gap analysis with requirements for the further work was derived.

The next stage of work then concentrated on setting up key scenarios of robust business development as derived from an analysis of the industrial partners of RODEO.

Basic assumptions: drafting the RODEO Process

The results of the expert interviews provided some key assumptions concerning robust business development and complexity science. These

assumptions formed the frame for developing the first draft of the RODEO Process.

Basic assumptions concerning robust business development

The main success factors for robust business development derived from work up to this stage were summarised as **good forecasting**, **organisational adaptability** and **a good sense of identity**. Good forecasting in this context meant that companies have to *be sensitive to the changes, the turbulence*, they could face in the future in order to be ready to react to them, in whatever way they could develop. The basic aim here should not be to create as appropriate and detailed forecasts as possible, but to be aware of possible sources of future turbulence and to pay attention to their development ("You do not see the signals if you do not know what you have to look for", M. Lissack, in interview, November 2002).

Organisational adaptability could be described as internal flexibility in terms of strategic planning and organisational structure. "You can find hints on the ability to adapt in the strategic planning and decision-making routines", B. Katzy e.g. pointed out (in interview, November 2002). Strategic planning for robustness in turbulent environments thus becomes a new role when compared with traditional planning. The focus is no longer on assessing different possibilities and preparing one of them in as detailed a way as possible, but on designing a *strategy that is adaptable to emerging changes* and that pays respect to multiple options. Decision making in this context means that *good problem-solving ability* is important here as well.

An adaptable organisational structure, on the other hand, is very much concerned with *flexibility and self-organisation*. "We have a very high degree of adaptability, depending on customer demands we are able to form very individual teams of developers", M. Medetz from the VE Softwarepark, one of the robust companies interviewed, reported (in interview, November 2002).

But, in some ways self-organisation is going on all the time and it certainly cannot be imposed on employees. If its potential is to be maximised, it has to be fostered by an "*enabling environment*", such as a supportive culture. This means that mistakes, for example, should be regarded as a necessary part of the learning process, while it is important to make individuals *feel responsible* for the actions they take. The role of management is also crucial in this regard, in providing the necessary "support & listen" attitude and in handling the difficult juggling between different positions (navigating or enabling) according to the prerequisites of the present situation.

This constant balancing between different modes turned out on the whole to be one of the most crucial factors of robustness, the balancing between exploring and exploiting a company's business fields, between planning a strategy and letting strategies emerge, between long-term and short-term strategies, and so on. This *constant balancing "on the edge"*, of course, is only possible if a company is sure about the things that are stable, its *sense of identity*, which is connected with its current ability but also with its past. Who you are affects who you could be and how you got to be who you are

influences where you can go, as M. Lissack (in interview, November 2002) stressed.

Apart from this awareness about a company's identity, there was another thing several experts in our interviews mentioned that was important for robustness: a certain kind of attitude towards turbulence. "Living with uncertainty and accepting that is reality", P. Allen stressed, as well as E. Larsson from GlaxoSmithKline, who found that "everyone wants to have everything calm and stable. But the world isn't like that" (both: in interviews, November 2002). So something like a *relaxed attitude towards turbulence*, the acceptance that you have to live with it, that this is just what life is like, seemed to be one of the keys of robust organisations.

With respect to *traditional tools* for robust business development, the findings of our expert interviews emphasised that they have to fit to the specific situation of a company and the turbulence it is currently facing. Moreover, they should respond to key ideas from complexity science, such as the absence of linear cause-effect relationships.

Basic assumptions concerning complexity science

Other ideas from complexity science that were derived as crucial for our further work were the assumptions that: 1) there is *no objective, completely measurable reality*; as well as, 2) *no single optimum solution*; 3) results/solutions *depend on the specific context;* and, 4) a purely optimised resource exploitation approach prevents advancements, so *emergence* (in the style of letting things develop bottom-up), the *edge of chaos* (balancing structure and flexibility) and *evolution* (allowing random exploration) are important.

When applying complexity science principles in companies, there are also some things that have to be kept in mind. For example, our findings emphasised that *it takes time* to create complexity thinking. *Permission has to come from the top* and it *needs a ch*ampion to promote the ideas, i.e. someone who is really enthusiastic about them. Furthermore, it is crucial to *provide an environment* where ideas can be discussed openly. When discussing them, however, it is important to *create a deep understanding for complexity*, which - however - has to be *comprehensible for practitioners*. One expert stressed that it is important to see the connection to the things that have been there before the here and now as well, i.e. to *see the connection to more traditional ideas and methods* and to show, "where they still fit in, but seeing where complexity can make a difference" (E. Mittleton-Kelly, in interview, November 2002).

Key criteria for framing the first draft of the RODEO process

After reading something that didn't quite fit with his thinking, "I'm not sure I know what complexity thinking is now when I read an article like that. ... The way I manage my group is based on personal religious beliefs about the way people should be treated, and that fits very nicely I think into complexity

concepts, although complexity isn't the driver", said E. Larsson from GlaxoSmithKline in an interview (November 2002).
The first draft of the RODEO process concentrated on bringing complexity to organisations without revealing its technically scientific basis, in order to manage the dilemma of having to provide both a "deep understanding of complexity " and "comprehensibility for practitioners", as pointed out above.

The complexity-inspired idea that had the strongest influence on this first draft was the assumption that solutions are context-specific, they depend on the specific situation the company is currently in. Another important consideration that had an influence on the first draft of the methodology was the idea that there should be a connection to traditional methods and tools that shows where they still fit in.

According to this, the first draft of the RODEO process concentrated on analysing the current situation of the company and offering appropriate tools and methods with in terms of the level and type of turbulence it faces and the vision it is striving for.

- First step: Context Analysis (analysing the current situation the company is in)
- Second step: scenario/vision (creating a vision for robust business development the company should go for according to its current situation)
- Third step: proposing tools and methods (according to the turbulence of the current situation)

The tools were supposed to be proposed depending on the level of turbulence the company was facing (a very turbulent environment: complexity-based tools; a more stable environment: traditional tools); the vision was supposed to be derived from a company's position on certain balance fields, such as the type of management role (navigating vs. enabling) and strategy (exploring vs. exploiting).

The resulting process would have been an innovative way to analyse a company's current situation and an innovative way to define a future scenario, which would then be worked towards via innovative tools (if the environment had been identified as truly turbulent) or traditional tools (if the environment had been identified as stable). But the question arose as to how you could define if an environment was truly turbulent if you assumed that there is no objective and completely measurable reality? Also, how can you set up an optimal future scenario for robustness if you assume that there is no single optimum solution and detailed long-range planning is prone to failure.

"You need to be able to recognise your adjacent possibilities. A lot of people can't. They are at A, they want to go to X. And X is maybe twenty steps away. [...] I find that a lot of people at a lot of companies are so focused on being able to articulate X, and then they hire consultants who work them backwards to N, that they never figure out B and C ", (M. Lissack, in interview, 2002). Moreover, would such a process have been appropriate for creating some of the conditions that had been stressed as so important, such as a relaxed

attitude towards turbulence and an environment where ideas can be discussed openly?

As the project proceeded, and with it the development of the process as well the tools and methods to support it, the learning of the consortium on the subject of complexity science also continued, and with it the impact of the basic complexity principles on which the RODEO Process is based.

Lessons learned along the way: adjusting the RODEO Process

The main things that had an impact on the learning process of the consortium and the resulting adaptation of the RODEO process included the close collaboration with the industrial partners in the development process, the incremental learning about the implications of the complexity science ideas in general and the engagement with some key complexity principles in specific.

A particular stage in our work plan focused on formulating scenarios concerning robust business development based on industrial partner cases. This was done by conducting a first draft of the context analysis with the industrial partners, where they had to analyse their current and future identity, the main factors they were dealing with (turbulent and stable) and how they could be influenced, as well as their current and future position on some of the main balance fields. The results of this analysis then, however, did not reveal some clear-cut profiles of typical company scenarios that showed how a company of type ‘A’ compared with a company of type ‘B’ should practice robust business development.

The data we had on the industrial partners was not sufficient to derive hypotheses like this (maybe a large-scale survey with a large amount of companies would have been); the only thing that became apparent was again that *all solutions have to be context specific*, there is no way of identifying "typical" robustness factors *all* companies face or typical developments they go through, from which general recommendations could be derived ("in this situation, you should get more navigating").

It thus turned out to be futile to try and set up these kinds of recommendations to support the framing of an appropriate future scenario. Moreover, from a complexity-inspired point of view, change happens from small points, in a bottom up way (and can lead to something like the butterfly-effect). This is not in line with the idea of proposing and implementing one big change process toward a more robust organisation.

Another important problem was that the process at this stage did not provide any help in creating the necessary cultural aspects – as pointed out above – such as a relaxed attitude towards turbulence or an environment supporting self-organisation. This was something the industrial partners especially emphasised in the development process. You cannot ask people to evaluate their navigator-enabler balance unless you create an understanding of what this means and you cannot offer complexity-based tools if the culture is not prepared for them (otherwise they will be used in a traditional way).

The industrial partners and researchers alike were fascinated by the complexity science principles and, as they were both integrated in the tool development process, fostered the conviction that *it is indispensable to initiate some kind of learning process* to make complexity applicable, otherwise the application of the concepts will not make sense. There is no use in proposing complexity-based tools, without preparing the culture for them, because it depends more on the "how" than on the "what" of use. Moreover, preparing for and coping with turbulence seemed to be strongly connected to empowerment, autonomy and confidence in the work place, so it looked important to initiate this in companies.

This was in line with the incremental learning about complexity science that was going on in the project as a whole. We were faced with the question, 'If complexity science suggests that *there is no optimal solution*, how can we suggest one by means of an optimal future scenario?' Is it not more important to foster the problem-solving ability of companies then, to make them more sensitive to the changes around them and to enable them to be more adaptable to them? And if complexity science in general assumes that ideas from the natural sciences can be applied to organisations, why should they only apply to some organisations (the ones in turbulent environments)? If complexity assumes that companies are complex, adaptive systems, just like ant colonies, then *it is important for all companies to learn about complexity* ideas and to pay respect to them in their future development.

For the integration of traditional tools this implied that you cannot teach people about complexity science ideas and then ask them to apply traditional tools that do not fit to complexity thinking because their current environment is not turbulent enough. If complexity applies, it should always apply, and the perceived turbulence of the current environment should point to tools that differ according to the respective situation (sometimes you have to do more navigating), but not in terms of their complexity-focus. This becomes clearer when thought of in terms of the idea that there is no objective measurable reality, which suggests that turbulence is very much concerned with perception. It is a very subjective thing, so trying to identify how turbulent a context is to decide which organisational form applies could be dangerous.

In the further course of the tool-development process, some principles from complexity science were chosen to guide the tool designing, in the way that all proposed tools had to be in line with at least some of them. The six principles that were chosen for this were the ones that had been identified in the literature review, and especially the expert interviews, as the most interesting ones for business development, the ones with the strongest impact. These principles then for the first time provided a real basis for talking about complexity science and for discussing and deciding why some concepts seemed to incorporate a complexity mindset and some did not. This delivered the clue as to how to create an understanding of complexity and a language to talk about it. *The six principles* became the basis of the RODEO process in its current form, and what it is focused on.

The current status of the process reflects this, as well as the integration of the other lessons learned pointed out above, so that the process evolved into its current form, which is outlined as follows:

- First step "awareness creation": creating an awareness of the six complexity principles (by discussing and experiencing them – really feeling them)
- Second step "context analysis": applying the six principles to the current context of the company (to analyse it and find a way to deal with turbulence)
- Third step "tool selection and application": supporting measures derived from the second step by proposing appropriate tools based on the six principles.

The first and second step now not only helps a company to analyse its context and define tool and method needs for the further development. These steps create a learning process with in terms of complexity and show companies how to apply the six principles to analyse their context and for deriving possible solutions. They thus enhance understanding about complexity, create the enabling culture necessary for it to flourish, and foster the problem-solving ability based on it.

The third step, the third module "Tool Guide", now does not only propose tools and methods that fit to complexity ideas. The basic guidelines based on the six principles that are used to evaluate and propose tools and methods are also made available for companies to judge their existing tools, so that they can see if and how the tools they are already using in their company can be applied in line with complexity science.

So as a summary of the lessons learned described above, it can be said that the main aim of the process now is to initiate a learning process and a change of culture, not to implement the best tools for a specific situation.

Outcomes of the RODEO Process - The 'Red Line'

After implementing the RODEO Process with 8 industrial partners, we then found that the RODEO Process, based on the 6 complexity principles, impacts on **'Traditional' Management Issues**, **Interconnectivity**, **Perspective**, **Insight**, **Learning**, and **Empowerment** in organisations, facilitating qualitative perceptions of robustness, turbulence and change. The 6 complexity principles were applied to organisations by the RODEO Process, through which a revised perception of the organisation was focussed on '**Cosmology'**, **'Traditional' Management Issues, and Interconnectivity.** [NB: Cosmology is a word used in the social sciences to describe someone's 'world view'. It is used in this context to refer to a similar thing, defined for RODEO purposes according to the emergent themes of perspective, learning and philosophy.]

The RODEO Process is **a coherent approach that enables businesses to deal with adaptation to both evolutionary and revolutionary change trajectories** through: changing their perspective & learning how to talk about

it; seeing a bigger picture; making sense of patterns; understanding themselves & gaining confidence; empowering themselves through interactions with others; understanding the past to face the future; navigating around the edge of chaos; generating ideas; developing organisations; managing change; and, managing people.

The RODEO Process **reminds managers that an organisation is a community of human beings to stay alive** through the avenues of networks, communication, managing people, corporate identity, leadership style, project management, entering new markets, and financial management.

The RODEO Process has **increased organisational competitive sustainability** by creating: organisational level competitive advantage; advantage in ambiguity; added value for clients; SME regional level competitive advantage; and advantage in the market place.

The RODEO Process enables organisations to learn **in what ways they should practice robust and sustainable business development**, for example by continuing to pay attention to external networking and relationships at the micro level while fully exploiting unique knowledge and expertise.

The RODEO Process facilitates an organisation **in achieving "fit" between what it does and what its industry environment requires today, while also preparing itself to stretch capabilities and evolve its culture to tackle the new environment that tomorrow might bring**, by identifying a relevant and context specific course of action. The RODEO Process sheds light on challenges, such as finding the relevant competencies needed for each new service or action. Organisations are then helped to face these challenges in the rest of their experience of the RODEO Process. Reasons organisations recommend following the Process are numerous, but include the belief that there are opportunities beyond frontiers and these give the opportunity to actually develop a more robust business that is adaptable and recognizes opportunities from what is emerging.

Industrial partners in the RODEO consortium have confirmed that **in an environment where the future is unpredictable and unimaginable, management becomes a matter of managing change and preparing to change continually**. Through their experience of the RODEO Process they have learnt that change is continual, a challenge to be managed, and change in an organisation initiates more change; changes are diverse, context specific, can form patterns, present challenges in maintaining organisational identity and USPs; but, changes bring new opportunities, and responses to change are various.

In developing the RODEO Process, the RODEO consortium has **explored and created a coherent perception of the modern business organisation, grounded in complexity science principles**. In developing a process which is grounded in complexity science principles, the consortium have created: a mirror for the company, a way to articulate intangibles, a way to see how to

balance organisational activities, a way to manage control, a coherent perception and process of service and knowledge expertise areas, a perception of the organisation which takes into account theory, practice and relationships, a perception of the organisation which facilitates generation of future potential, another way to practice business development, the means to add to pre-existing success, as well as creating some future challenges.

Implementation of the RODEO Process has demonstrated a significant **link between the organisational learning field and complexity science as transferred to organisations by means of the 6 principles**. Organisational learning became significant in that IPs: experienced and responded to learning challenges; learned about themselves; made lessons learned; fostered relationships with each other to learn and as a result of learning; learned with each other; integrated learning from other sources; applied their learning; developed new ideas out of learning; constructed a way forward out of learning; and, learned about learning.

Finally, RODEO industrial partner case studies demonstrated lessons learned about **the application of complexity science in the organisational domain**. RODEO IPs found that the application of complexity science to the organisation: has value for SMEs; increases perceptions of network robustness; facilitates confidence building in networks; facilitates the understanding of communication problems; facilitates the articulation of intangibles; provides enhanced organisational perspectives; increases sensitivity to problems; provides temporal insight; and, compliments existing management theory and practice.

Organisational Fit with Current Industry Needs & Responding to Unknown Futures through Organisational Capability Stretching & Cultural Evolution

In the RODEO Description of Work (12.12.2003) a key issue was raised: “among all the “different challenges facing the modern firm, there appears to be a common strategic *issue*...: how can a firm achieve “fit” between what it does and what its industry environment requires today, while also preparing itself to stretch capabilities and evolve its culture to tackle the new environment that tomorrow might bring? This has always been a challenge for firms, but the speed with which environments and markets change in today’s world makes this an even more pressing concern” [Cusumano, 2001]. The way industrial partner cases demonstrated learning in respect to this point and how the RODEO Process has benefited them is outlined below (for context and further information please refer to the relevant case study section).

The ways organisations achieve fit with industry and prepare to stretch to evolve are numerous: competitive advantage can be gained by offering new services (CS5-7); new services emerge by grouping together different competencies from classical fields (CS7); moving from being a simple provider of components to a company that also shows the customer different ways of how they can do things is important to drive and face future demand (CS5-7); it is the experts who sell things, because they are the only ones who can talk to the experts in other companies - the role of the expert has

changed/enlarged (CS7); research plays an important role in the company (CS7); it is necessary and good to take risks when thinking about and realising innovations (CS6, CS8).

There are challenges: a critical challenge is to find the relevant competencies needed for each new service; customer decisions regarding new investments should be addressed; change and transitions are inevitable; diversity is ubiquitous; experts have to learn what the customers want; robustness means "You have to understand things more, you do not control them"; The ultimate decisions are based on profit or non profit, but where there is trust between budget allocators and managers, there is room to experiment; competencies are important and need to be fostered; individuals have different abilities, objectives and work styles and this is a key issue that has to be respected to enable emergence to take place; the fit provided is one driven by needs of people and is not, for example, concerned with the importance of financial drivers as such.

How the RODEO industrial partners overcame these challenges was through diverse routes:
"There is a way to begin…": as it is a new paradigm of management, which requires learning, the organisation has to start where the company is; the actual way of management, the culture, the strategy and organisation needs to be well understood before implementing the RODEO Process; there is a kind of "readiness to implement" state that should be evaluated before embarking on the RODEO process; it is possible to begin very quickly with the starter-kit - if people are interested, they will continue, otherwise the process will stop by itself.

1) **Using the 6 principles & the Starter Kit**
    a. By allowing the 6 principles to change your personal life you can see more the importance and value of yourself in the organisation (in terms of 'what can I give the organisation, what can it give to me?')
    b. The RODEO process helps people to see what their value is for an organisation
    c. Out of the process come increased feelings of responsibility
    d. When all people are involved there is a better understanding of the organisational context because the sharing of information creates a common identity
    e. The language based on the 6 Principles describes previously not explicable phenomena
    f. Networking opportunities and short term growth based on inter-organisational learning experiences maintained through a shared ideological approach has provided the organisation with the means to develop itself
    g. Through the language given by the starter kit change can be communicated more effectively
    h. The 6 principles allow management to handle clear challenges and not so clear challenges more effectively

i. Ideas of history, edge of chaos, pattern recognition, etc., explain or give names to something that everyone agrees are synonymous with the experience of all employees
j. It is possible to hope to do something because of having a strong feeling, without quantitative parameters

2) Using the Context Analysis

a. It is essential for the company's development to be as adaptable as possible to exploit new opportunities
b. The complexity-based view point provides an understanding to look at what is going on inside and outside the company
c. RODEO complements the existing practice and influences these so that that these increase their impact in turbulent environments
d. It is possible to see the current and future situation now, by being able to better see the connections between problems and how they relate
e. The Context Analysis can make explicit what was typically kept implicit
f. Making a situation more tangible makes it discussable
g. By substantiating the intuitively taken solutions in the company situation the Context Analysis reinforces confidence of the participating employees that their actions chosen are right
h. There is a need to reflect more on growing competition so derived measures on how to deal with the requirements of the market are crucial

3) Using the CompetencyDaq

a. A detection of missing competencies and a comparison to available competencies is critical for service-providing
b. It is important to detect at an early stage if needed competencies are missing or available in order to be able to respond to new demands from the market
c. The efficiency and effectiveness of human resources is important for a company's success
d. A complimentary fit between the individual aspirations of key people in the company and their current service and networking opportunities provides a certain amount of success for the company
e. It is possible to see how the current competences/skills in the organisation fit to the current and future organisational situation by means of the CompetencyDaq
f. The CompetencyDaq provides support to achieve the fit between what it does and what its industry environment requires today
g. The CompetencyDaq facilitates the identification of the best match of people suitable to tackle a challenging task
h. The CompetencyDaq offers great possibilities to really define the most powerful group of people for every task to be done inside the Department

4) Using the Opportunity Exploration Kit

a. It is essential for the company's development to maintain the ability to recognize new opportunities

b. It is possible to explore and exploit future challenges and opportunities new environments could bring
c. Making the transition from re-active responders in the environment to proactive environment changers enhances the ability to tackle it in the short term at least

5) In addition:

a. The support and positive personal feelings of a few people on the board of directors is necessary
b. The strength of positive experiences in the recent past, a position of trust between key people allows new offerings to emerge
c. Trust is a key factor that must be cultivated in order to be able to tackle the challenges of tomorrow.

Reasons RODEO industrial partners said other organisations should pursue these aims include:

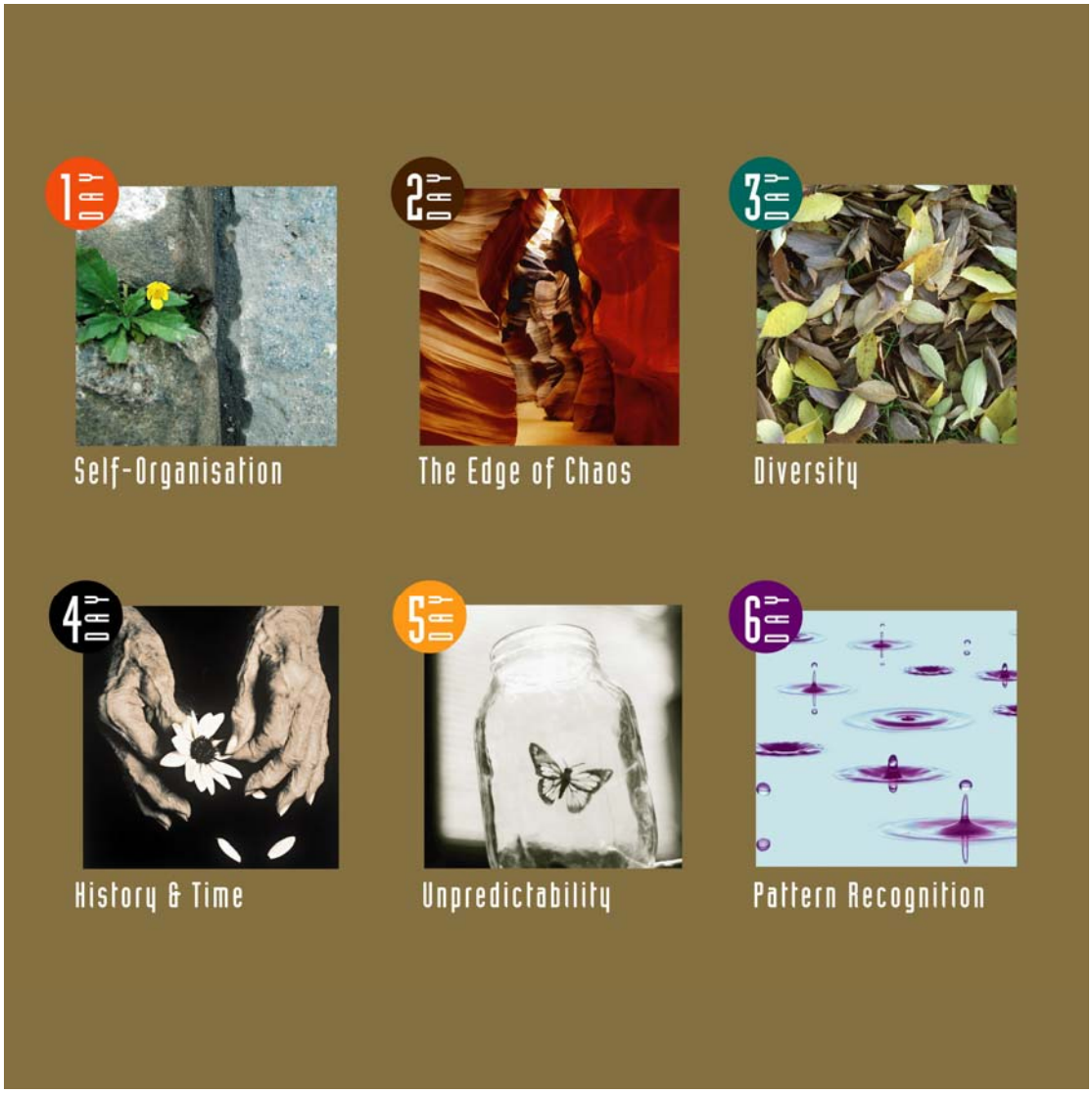
- "There are opportunities beyond frontiers and these give the opportunity to actually develop more robust business that is adaptable and recognizes opportunities from what is emerging"
- "To identify changes as opportunities"
- "There is potential to make the 6 principles work for you"
- "That there is potential for something to emerge - a new line of innovation"
- "If people have proven that their ideas are worth the money that has been invested into them, then these employees are highly esteemed and awarded with trust"
- "It's easier to see how the current competencies/skills fit to the current and future organisational situation, to evaluate competences now and to derive necessary measures"
- "A company can spend more time on what has been identified as its main strengths"
- "Consciousness and sensitivity to emergent chances increases"
- "Management and employees feel better prepared for problems"
- "Management and employees have a stronger feeling for their identity now, a stronger corporate culture, more the feeling of being a team"
- "They are more enabled to pay more respect to their competences and to foster them in a way that more self-organisation can help to respond to customers in a better way"
- "More freedom of work increases collaboration and communication, which has in turn led to new customers"
- "An increase in sensitivity to emerging patterns has helped to develop new services out of perceived customer interests"
- "Enabling emergence, the self-organisation of structures, competences and contacts, can have very positive effects"
- "The process has initiated a stronger sense of identity, stronger reflections on what are key strengths and how they can be used"

The next chapter introduces the first module in the RODEO Process, the Starter Kit.

CHAPTER 12

THE STARTER KIT

**By Sibylle Heunert, Patrick Klein,
Margarida Monteiro de Barros,
Carol Webb, and Michael Wunram**



The Thinking behind the Design of the Starter Kit

The Target Group

The target group is potentially every employee who is interested in knowing more about how concepts of Complexity Science could help to either:

• better understand phenomena arising in day to day work (e.g. “I planned this task to its utmost detail, but it went wrong anyhow” etc.

• learn that complexity is the rule and not the exception in turbulent environments (e.g. “Why are we changing our strategy again? We changed already a year ago! These guys up there really do not know what they want…”)

• find ways, means and potential strategies to cope with turbulent situations (e.g. “Ok, if this is Complexity, then what does it provide to me? How can I apply it?”).

It is very important that the goal and intention of the RODEO Starter Kit is properly communicated to the target group. In this way it will enable the interested/concerned employees to make sense about the starter kit and its purpose. The first communication with the target group might be decisive for the overall success of acceptance and adoption. Therefore, it should consider that it will address people that have very limited time frames to be introduced to something new.

Goal of the RODEO Starter Kit

The goal of the starter kit is to provide a basic introduction to employees who are interested and want to apply complexity based approaches in their company. It is not the intention to explain all theories and their roots in detail, but to allow them to understand the basics (e.g. you do not need to know how cars are built, in order to drive them). Therefore, it will be necessary to provide the employees with inputs, so that they can

• consider a different POINT OF VIEW,

• have some REFERENCES/EXAMPLES,

• consciously EXPERIENCE complexity,

• RECOGNIZE, OBSERVE and IDENTIFY complex phenomena.

Potential Content of the RODEO Starter Kit

The intention of this approach is to lead the participants through an apprenticeship based on action – experience (first experience, and then concepts to describe the experience, see “science praxis” - Agyris). It is commonly accepted, that learning is most effective when it is linked to practice. However, learning a new perspective and reflecting one’s day to day business through this perspective takes time. The decision for the application of the RODEO Starter Kit must therefore consider the impact of time (psychology of learning) on the overall process. One fundamental item of the RODEO Starter Kit should be exercises, exercises that are based on action, music, metaphors, films or ridiculous situations. These exercises should confront people with a new perspective that leads them to change their point of view, by getting them out of their routine thinking. It is very important to let participants experience the exercises and not only see them happen.

After the exercise it is important to reflect what happened during the exercise (provide feedback). The facilitator has then to “elicit” the participant’s emotions and feelings. Understanding complexity and dealing with it can best be observed through the expression of fears of the participants. From psychology it is known that individuals do not feel comfortable in

chaotic/uncertain situations and always try to achieve a certain amount of stability and put structure in their observations, even if participants often say they do not (see Watzlavick 1973). Fear, feelings and intuition are important indicators to be addressed when trying to bring people to understand complex situations.

After the exercises and the feed-back, some general input about the 6 complexity principles should be given to the participants. The facilitator has to establish a clear link to the concrete experiences made and feed-backs obtained during the exercise. Further links should be established to the individuals' daily experiences within teams, organisations etc. This work gives the possibility to the facilitator to adapt his/her inputs to the concrete and specific needs of the employees.

Based on this thinking, this is what we came up with:

The Complexity Starter Kit at its very heart now aims at sensitising anyone interested in the topic of Complexity Science. It consists of three distinct steps. The first step (supported by The RODEO Calendar) aims to "break the ice" by presenting the 6 complexity principles which the RODEO Process is based on, in a very simple way, in order to raise awareness and stimulate curiosity. The second step (supported by The RODEO Exercise Class) allows those taking part to "experience" complexity. By the means of different specified roles people start acting according to the one they are given. The consequence is that along the duration of the exercise the participants experience the 6 complexity principles, those of special interest to RODEO.

The experiences are then reflected with the help of a facilitator who is guided by a clear set of questions. The third and last step of the Complexity Starter Kit (supported by the RODEO Follow-up Pop-up) allows the participants of the workshop to follow-up on their recently made experiences by recognising the different phenomena discussed in their daily working practice and reflecting individually (but preferably in online groups) on these. The RODEO Follow-up Pop-up is a web based tool, that allows its users to get more detailed information about the principles experienced, and further allows its users to write down comments, reflections, questions, etc., which are stored for others to read or to answer. In summary, it is presented to organisations as follows:

The RODEO Complexity Starter-kit

Summary:
Introducing 6 complexity principles in 3 simple steps
A stand-alone introduction to complex phenomena
Preparing participants for the RODEO Business Development Suite

Overview & Benefits:
- Bring state-of-the-art management theory into your organisation
- Enable employees to think and act in a more robust and adaptable way
- Put the uncertainty and rapid change of turbulent business environments into perspective by recognizing the opportunities provided
- Gain a fresh perspective and make sense of work and business in a new way
- Learn about six complexity concepts: self-organisation and emergence; the edge of chaos; diversity; history/time; unpredictability; pattern recognition
- Introduce yourself and your colleagues to the RODEO business development method

The Complexity Starter-kit is directed at:
- Those who need an update on management theory
- Knowledge management, business development and strategy teams and managers
- Any employee interested in an introduction to complex phenomena

Content and Key Learning:
STEP 1: The RODEO Calendar:
- Begin the complexity learning process
- Visualise and ponder six complexity concepts

STEP 2: The RODEO Exercise Class:
- Encounter and make sense of the six complexity concepts in a group context
- Experience and develop understanding through interactive games and discussions

STEP 3: The RODEO Follow-Up Pop-Up:
- Practice the new perspective day-to-day by reflecting on the six complexity concepts, and more
- Engage in discussion
- Submit thoughts, reflections and experiences
- Continue developing understanding and knowledge to enhance your perspective further

Complexity Starter-kit logistics – What is involved?
The Starter-Kit requires approximately six hours of input per employee taking part, over a two-week period. It is introduced via a series of written and graphic materials, interactive exercises with a facilitator, and an online software application.

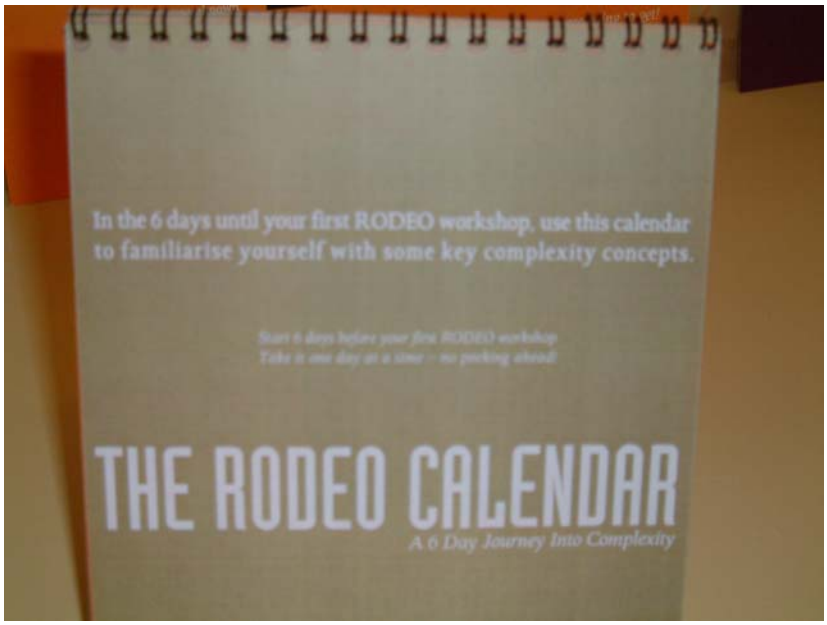
The next section describes the first part of the Starter Kit, the RODEO Calendar.

Starter Kit Part 1

The RODEO Calendar

By Carol Webb

Seven days before the Starter Kit Exercise Class and Workshop, the proposed participants receive a 6 day desk calendar – to learn the name of one complexity principle per day.

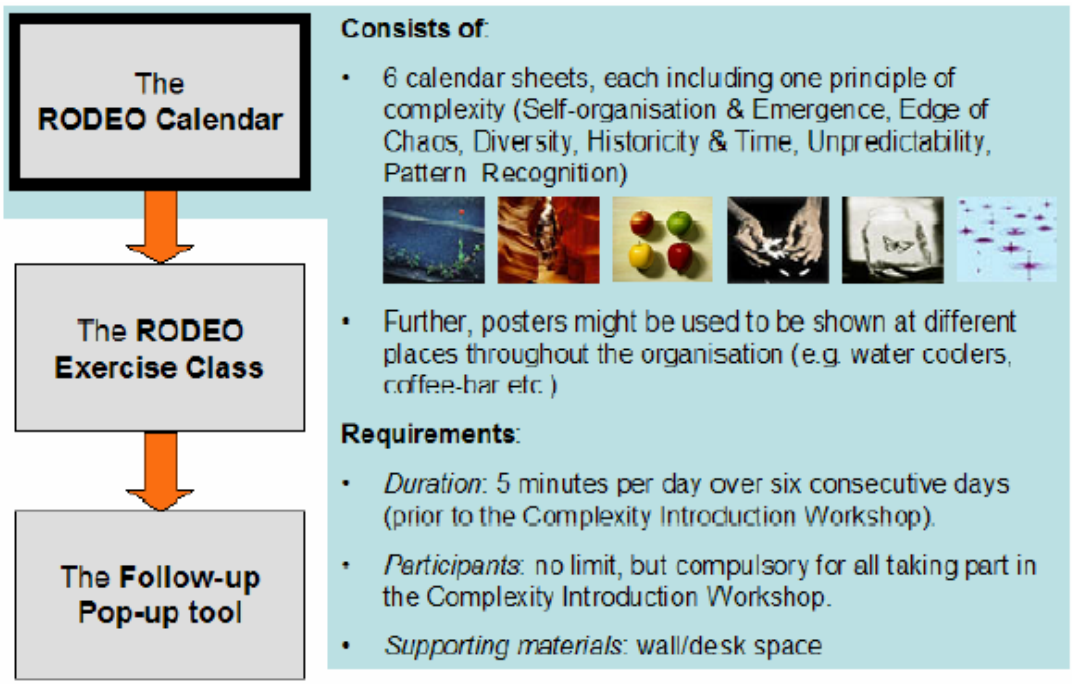


The following instructions are given with the calendar:

> **THE RODEO CALENDAR:** ***A 6 Day Journey into Complexity***
>
> In the 6 days until your first RODEO workshop, use this calendar to familiarise yourself with some key complexity concepts. Start 6 days before your first RODEO workshop. Take it one day at a time – no peeking ahead!

Each page of the 6 day calendar focuses on a different complexity principle: self-organisation and emergence, the edge of chaos, diversity, history and time, unpredictability, and pattern recognition. These are presented with eye catching images that create a high impact – the same ones that you see used throughout the book in fact.

The calendar is also accompanied by a poster version of each of the 6 days. These can be put up near photocopiers or by coffee machines, in fact anywhere that people sometimes get together and have a conversation. The idea of this is to create the opportunity for people in the organisation to talk about the complexity principles and develop some kind of feel for them with each other, in order to begin the group sense-making experience.



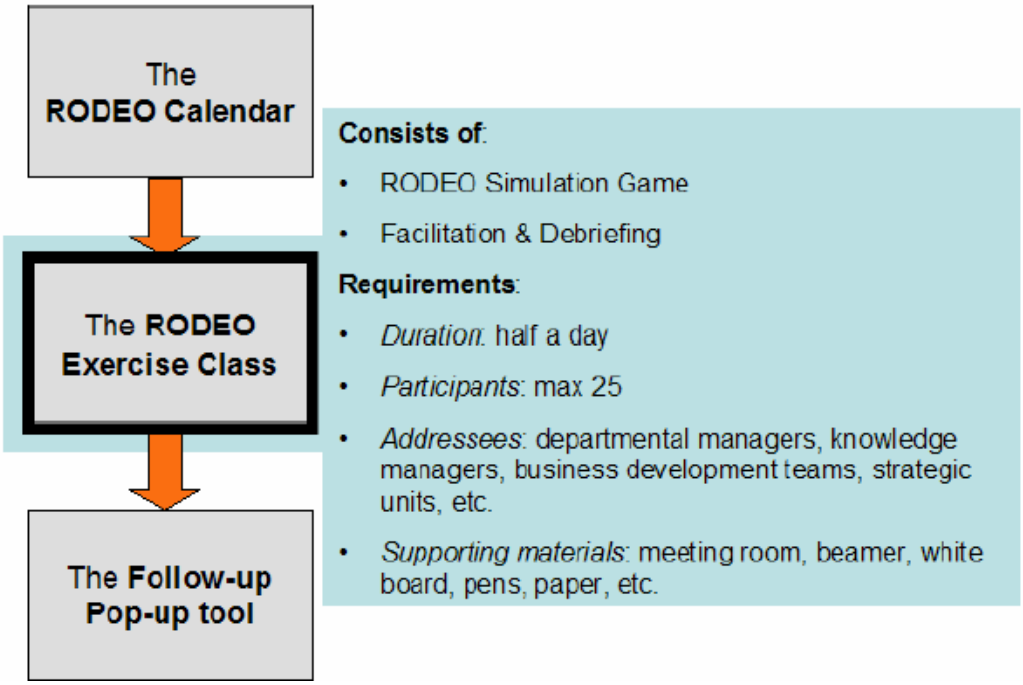
By the seventh day the participants have been stimulated by the pictures and new words, and are curious to proceed to the next part of the Starter Kit, namely, the Exercise Class and Experience Workshop. This should take place on the seventh day after the introduction of the calendar. The next section describes the workshop in detail.

Starter Kit Part 2

The RODEO Exercise Class & Experience Game

By Carol Webb

This chapter introduces and explains the Starter Kit Exercise Class and Experience Game.



In the context of this class and game, a 3-4 hour workshop is performed as a kick-off. Usually workshops start by presenting some initial theoretical content and afterwards provide some exercises. However, in a series of cases it has proven to be more effective to first let people experience a certain situation and then reflect on it theoretically under the advice of an expert. This usually creates a high impact “aha”- effect. The aim of the workshop is to lead the participants through an apprenticeship based on action – experience. It is commonly accepted, that learning is most effective when it is linked to practice. However, learning a new perspective and reflecting one’s day to day business through this perspective takes time. The decision whether to take part in the Complexity Starter Kit must therefore take into consideration the impact of time (psychology of learning) on the overall process.

The objective of this workshop is to provide another way of looking at things; help employees understand the basic meaning and implications of self-organisation, emergence, the edge of chaos, diversity, unpredictability, historicity/time, and pattern recognition. It requires 4 people or more, and the maximum number of players is 25. The following agenda may be useful:

- **Welcome & Introductions** – 5-10 mins
- **The "Experience" Game** – 40 mins max
  - Break/Coffee – 10 mins
- **6 Complexity Principles**: Group Discussion – 65 mins max
  - Break/Coffee – 10 mins
- **6 Complexity Principles In Your Organisation**: Smaller Group Discussions – 35 mins max
  - Break/Coffee – 10 mins
- **Implications & Drawing Conclusions:** Introduction of Context Analysis Tool & RODEO Follow-Up Pop-up Tool – 20 mins
  - End of workshop

Total time: 3 hrs 20 mins

The following instructions are given to participants:

1. You will receive a card.
2. here are 4 instructions on the card.
3. You have to do all 4 things.
4. Do not show your card to anyone else or let them see it.
5. Do not tell anyone else what is written on your card.
6. Read the card and wait until the game starts – Facilitator will say 'go'.
7. Do what is written on the card.
8. Continue until the game stops – Facilitator will say 'stop'.
9. Only show the card to the facilitator if asked.
10. If you have any questions, ask now before the game starts.
11. Do you have any questions? Are you sure.

Then, each person is given a card from a pack of 25 playing cards (to be kept in order and given out to players in order) with the instructions written on them (see appendix 1 for a copy of the content of these).

An exciting and challenging game!....

(See video!)

Facilitator Instructions:

Give the instructions to the group – make sure they understand they are not allowed to tell/show others (except you) what is written on the cards. Then give the cards out (one per person) in the order of the pack – put any remaining cards back in the pack. Wait until everyone looks as though they have read and understood the card, and say 'go'.

During the exercise, don't do anything to interfere intentionally – but if you somehow get involved, tough luck! Tell the group to 'stop' after about 20 minutes or half an hour. Break for coffee and a calm down! (If the exercise has come to a natural end, stop for coffee and a break sooner).

Debrief Instructions:

1. Keep things light-hearted!
2. Ask them what the experience was like – allow them to ask each other questions and to make their own comments about what went on.
3. Point out that all the things that did or did not happen could be talked about in terms of 6 complexity principles, and that you would like to discuss with them how this might be so.
4. Use a flip chart to write down each of the 6 complexity principles as you come to them in the following discussion. Or you may wish to put some of the following key points on several PPT slides. Go through each one in turn:

Self-organisation/emergence: Ask the group if they felt any particular person was in control of what was happening during the exercise or if anyone knew what the outcome would be in advance. Get them to discuss this a bit and talk about what happened. The overall answer should, however, be 'no, no-one was really in control, and outcomes emerged – they were not planned

and could not be predicted' – back this up with examples of what happened in the exercise. Tell the group we can call this 'self-organisation' and 'emergence', where people are getting on with their own individual objectives, while interacting and with and adapting to others, and producing novel things and ways of doing things – emergence.

- Additional discussion questions/info if needed:

Is any single person in command or control of the situation? No Is someone planning and managing the situation? No Is there any obvious hierarchy among the people you are with? No	Are people organising themselves without a 'leader'? Yes Is this going on continuously? Yes Are people interacting with each other in simple ways? Yes	<u>This is Self-organisation</u> Because: complex systems structure themselves out of themselves; interacting elements act according to simple rules; order created out of chaos;
Can you easily predict what is going to happen next? No	Does the way people are interacting appear to be random? Yes Do you see new stuff emerging from people's interactions with each other? Yes Could it be that if you were to look on a wide scale there might be some patterns emerging? Yes	<u>This is Emergence</u> Because: patterns emerge from interactions; patterns inform behaviour of system; new qualities arise through particular types of networks; produces higher complexity out of many simple components; each individual component outgrows usual capabilities – or, people outgrow their competencies.

<u>Edge of chaos:</u> Try to have a similar conversation about the edge of chaos, and pick out examples from what just happened that illustrate creative activity and change.

- Additional discussion questions/info if needed:

Is there lots of creative type activity going on here? Yes Are there lots of transitions and changes from one thing to another?	<u>This is the edge of chaos</u> Because: living networks reside in a critical phase between chaos and order where networks find creativity and stability in an optimal balance; living systems are most creative, with the greatest potential for discovering order that expresses an emergent property for the whole system, when they are living near the 'edge of chaos'; they naturally undergo

Yes	transitions from current order to chaos, from which emerges new order.

Diversity: As with the first two points, discuss with the group how the exercise demonstrated the diversity of those in the group, and ask them how this reflects the reality of their day to day activities in their own working lives.

- Additional discussion questions/info if needed:

Are differences between people flattened out or levelled? No	Does change happen easily? Yes Does the way people interact and change appear flexible? Yes Does the 'system' where you are seem strong? Yes	Diversity Because: Networks combine the most different variants, characters, functions; high diversity creates more possibilities to react flexibly, on environmental changes; the greater the variety within the system the stronger it is; ambiguity and paradox abound; contradiction is used to create new possibilities to co-evolve with their environment.

Unpredictability: Throw this word at the group like a question: "Unpredictability?" And see what they say… If anyone argues that based on the rules of the game and each person's instructions that events could be understood to have some level of predictability, then challenge this and ask to what level of detail prediction could be possible. Use the example of the weather: even though we know that certain things are possible, it does not mean we can always predict what will happen, where, when, and how etc.

- Additional discussion questions/info if needed:

Was the actual detail and order of the outcome of the exercise determined by an elite group? NO
Was anyone trying to forecast or control behaviour? NO
Were any actions isolated? NO
Could you see interlinked groups or networks with lots of people that are acting and reacting among each other? YES
If something happened in one place did you see consequences elsewhere? YES
When one thing changed did everything else change too? YES – maybe not immediately but there would definitely be some consequence somewhere.

- Due to complicated interrelations, it's very difficult to foresee or to control behaviour of the nodes of the network, when reacting to impulses (from outside or inside the network).
- Emergent order is holistic – a consequence of interactions between elements of the system

- All systems exist within their own environment and they are also part of that environment
- as their environment changes they need to ensure best fit
- When they change, they change their environment too

History/Time: Discuss with the group the way the instructions were carried out during the exercise and how they were modified as time went on, due to the interactions of others and the consequences of other actions. Elicit some examples.

- Additional discussion questions/info if needed:

Could you go back in time and change something during the exercise so as to better fulfil your instructions? NO
What decisions did you make that have brought you and the group to where you ended at the end of the exercise?

- In a social context, the series of decisions which an individual makes from a number of alternatives partly determine the subsequent path of the individual;
- Before a decision is made there are a number of alternatives – after, it becomes part of history and influences the subsequent options open to the individual.
- Unique histories mean every decision the organisation makes is context specific

Pattern Recognition: Tell the group that by looking back at where we have come from we can start to make sense of where we are now – even though this is always constrained by a subjective perspective and limited information. Ask the group to think about what their next steps would be if they were thrown back in the exercise situation again now, having had time to reflect on what happened. Draw them to the idea that although they can't change anything that happened in the past, they can certainly be more prepared to adapt and change in the future.

- Additional discussion questions/info if needed:

Can you always see direct and proportional links of cause and effect? NO
Are people and groups really linking in random ways? NO
Are small numbers of people loosely coupled to others? YES
Are small changes amplified? YES
Can you see big effects coming from small changes? YES
Can you see patterns of activity being repeated over and over again? YES

- Complex systems are defined in terms of rich interconnections between diverse components
- The ways agents in a system connect or relate to each other is critical to the survival of the system - from these connections patterns are formed and feedback disseminated, r**elationships between agents** are more important than agents themselves
- Self-organised, living networks always show similar patterns.

- Feedback is the systems way of staying constantly tuned to its environment and landscape and enables the system to re-adjust its behaviour.
- In far from equilibrium conditions change is non-linear, so small changes can be amplified, and produce exponential change
- Networks are able to provide stability, while reaching to changes and impulses of the environment
- In case of disturbances networks change the patterns of the interrelations of the nodes, the more complex, the more options for change
- Novel, emergent order arises through cycles of iteration in which a pattern of activity, defined by rules or regularities, is repeated over and over again, giving rise in coherent order.
- Structures are produced by different historical events and unique interactions
- Through feedback loops (positive and negative) incidences may produce an unpredictable resonance; the chaotic state has a distinctive pattern to the fluctuations in variables – pattern changes as order begins to emerge from chaos

After all this it is time for a well-deserved **Coffee Break**!

Come back to the group after the coffee break and ask them in pairs to think of two examples from their own organisation that illustrate each of the following: self-organisation, emergence, edge of chaos, diversity, unpredictability, historicity/time, and pattern recognition. Facilitate this part of the exercise by walking round and chatting to each pair or group while they are working, and help them understand the 6 principles a bit more. Then bring the group back together after about 15 to 20 minutes, and spend about 15 minutes facilitating a group discussion on the examples given. Let each pair explain their own examples, and try to get a bit of debate going. By this time people are ready for another **Coffee Break**!

Following this break it is time to start to bring the workshop to a close by discussion possible implications and drawing conclusions. A good question to raise might be, 'If this is the case, what does it mean for you?' About five or ten minutes should be spent on this. This conversation should lead smoothly into the RODEO Context Analysis Kit description, the next module of the RODEO Process. This can be done via a PowerPoint presentation, where the link between the 6 complexity principles and the context analysis kit is shown. This is semi– sales pitch and semi-commitment building.

Once this has been done it is time to conclude and introduce participants to the RODEO Starter Kit Follow Up Pop Up, so that they can go away from the workshop and continue their learning and understanding about the complexity principles further, both by themselves and in conversations with others via an online discussion group.

<u>NB: Important advice for implementation in groups larger than 12 people, and especially in those where 25 people are present:</u>

In this case there should be either 2 facilitators and following the exercise/game the group should be divided in two for feedback purposes, and then brought together again for the rest of the rodeo sales pitch and intro to the follow up pop up; or, if only one facilitator is possible, not so much group discussion and more input from the facilitator. This is because the larger the group is the more difficult effective discussion is to manage. Obviously the former option is better when possible.

Who will implement?

An external facilitator should implement the starter kit workshop with the people in the organisation(s) in question where possible.

The next chapter describes the thinking behind the Starter Kit Follow-Up Pop Up.

Starter Kit Part 3:

The Follow-Up Pop-Up

By Patrick Klein

The concept of the Starter Kit Follow-Up Pop-Up tool comes from something like the “tip of the day of windows”, where useful hints for using “windows” pop up on the desktop as soon as the application is launched. For the Follow-Up Pop-Up such an application should be used to present complexity thinking in form of short anecdotes, analogies or metaphors. The content snippets should each illustrate a little part of complexity thinking in a way that can easily be understood without knowing the in depth theories of complexity as such. Thus the following objects are addressed here:

• To stimulate thinking in line with complexity theory.

• To make employees familiar with the need for constant change.

• To pull every employee out of everyday life for a very short time.

Link to Complexity Science & the 6 Principles

This tool addresses no specific need, but aims to stimulate complexity thinking and therefore prepare employees within a company to better deal with turbulence. Hence specific complexity science principles like pattern recognition or edge of chaos can be addressed. In the sense of Stacey’s work it should facilitate the self-reflection of individuals and groups in and between organisations. The organisational level will at least be influenced indirectly since a change on individual or group-level thinking cannot be taken isolated from the organisational level (Stacey (1996); “Complexity and creativity in organisations” see especially chapter 10).

The underlying assumption of the tool is based on the idea that even if complexity studies can not easily be understood at a scientific level, there can be found eye catching “experiments” or visualizations which are immediately understandable by everybody. These experiments might influence employees in their way of thinking and perceiving their environment. The awareness of complexity principles, like self-organisation and emergence can be linked to the business context.

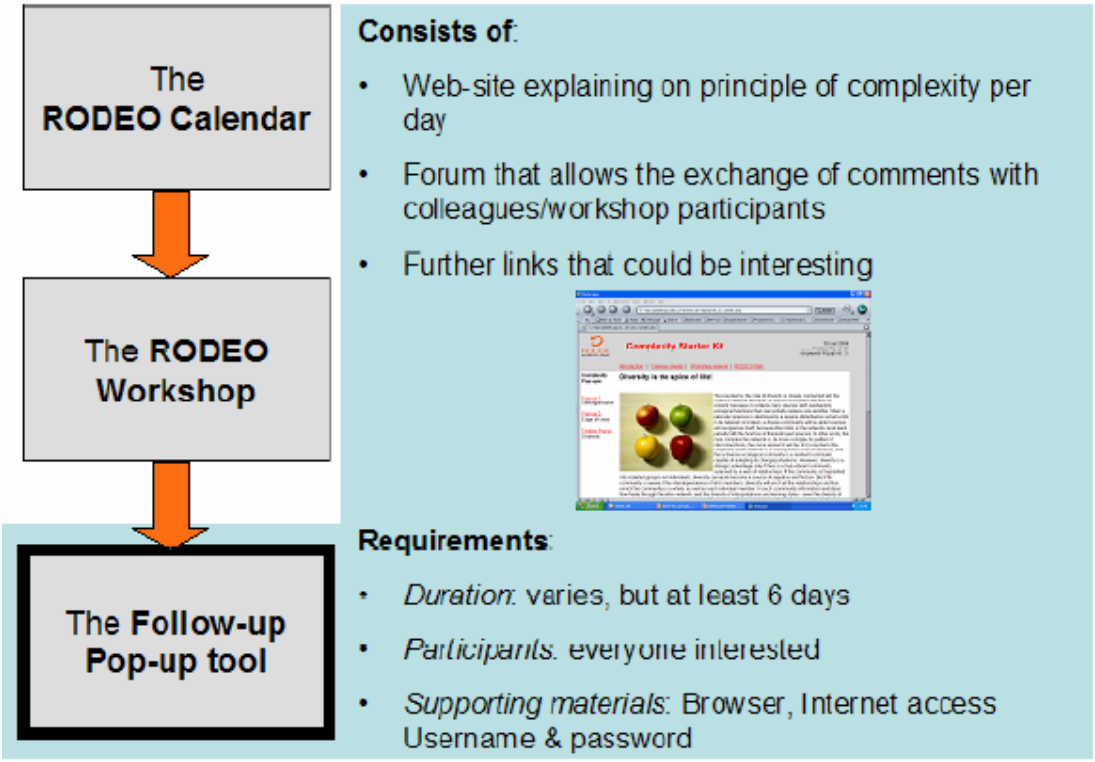
Users of the pop up who felt some resonance with the complexity principle in question and who has been additionally indicated to a possible business context, will potentially be stimulated to change his way of thinking, or at least add another angle to his point of view.

His perception of day to day business will be influenced but any changes of thinking itself can not be predicted, but there should be a measurable influence also in daily business. According to Hamel 2001, bringing new “genetic material” into the strategy process always serves to illuminate unconventional strategies.

USP: Tools similar to the Follow-Up Pop up have been used as containers for presenting various information snippets. Thus the crucial point is not the technology, but the content itself. Since complexity science can be seen as a kind of lens for looking at reality, the tool aims to introduce this lens to everybody.

Software Support: The tool can be installed on each PC in a company without great effort. Thus it is possible to install the Pop Up tool on every computer. Every employee could be reached as long as he/she has access to a PC. The pop up technology can be supported by different authoring tools which are available commercially. These software tools allow add into the pop up one's own content. Additional functionality may allow also linkages to the web (e.g. to source providing more information and provide for a deeper understanding) or internally (e.g. a linkage between two content pages).

The Follow-up Pop-up tool: The Follow-up-Pop-up tool represents the third part of the RODEO Starter-kit. It is a web-based tool easily accessible via the Internet. It describes the 6 complexity phenomena in an easy to understand way, so that the user of the Follow-up Pop-up tool are able read some more details after the RODEO Exercise Class. The intention is that participants of the workshop shall spend 5-10 Minutes per day trying to understand the phenomena and identifying these in their daily working environment. The tool also provides the possibility to post statements, questions, comments for other people to read and answer at will. This process facilitates the exchange of experiences and reflection of the newly learned topic.



The next chapter introduces and explains the next module in the RODEO Process, the Context Analysis Kit.

CHAPTER 13

THE CONTEXT ANALYSIS KIT

By Alex Bading, Dorothee Frielingsdorf, Fiona Lettice, Liza Wohlfart & Atai Ziv

The Context Analysis Kit aims to help identify a company's internal and external environment from a turbulence perspective and by elaborating how the view from a complexity perspective based on the 6 principles can help to find useful measures and tools for dealing with it. Moreover, it aims to help companies get awareness for what complexity means for their specific situation and to create minds prepared for the daily challenge of turbulence.

The first step of the Context Analysis Kit picks up on the contents of the Complexity Starter Kit by revising the six main principles the RODEO Process is based on. The second step then links these principles to the business context in defining what the implementation of these principles means for a company. The third step then relates this to the concrete context of the company running through the workshop in setting up a robustness profile ("how well have we implemented the principles"); this step is based on the analysis of questionnaires that have been filled out by the participants and analysed by the moderators before the workshop ("robustness check). As identity has turned out to be one major topic of companies striving for robustness, the third step also contains an identity check that helps companies to get a sense for who they are and where they want to go. The fourth step then takes a look at the turbulence factors the company is struggling with and identifies the most crucial ones ("turbulence check”). The

fifth step finally brings the notion of robustness and turbulence together in looking at how the company can deal with the crucial turbulence factors on the basis of the robustness profile. This step ends with the identification of necessary measures and supportive tools/methods.

The Context Analysis is carried out according to the following instructions:

Input from Complexity Starter Kit

The workshop participants have used the complexity calendar, participated in the starter kit workshop (1/2 day workshop) and used the complexity pop-up. They have therefore:

- encountered and made sense of the six complexity principles in a group context
- experienced and developed understanding through interactive games and discussions
- gained a first impression of the notions of robustness, turbulence and … through the follow-up pop-up device

Start of the Context Analysis

Phase 1: Warm-up: Applying complexity science to business organisations (15 min.)
Recap of the six complexity principles.

Summarising and interlinking:

The moderator identifies how many participants have taken part in the Starter Kit workshop. If there are some who have not, the following introduction is more extensive.

The moderator now recaps all six principles in a way that links them to each other (maybe supported by an example, a joke or with reference to the Starter Kit Experience Game). While doing so, he/she pins the principles, writes (and maybe some explanations) on the wall.

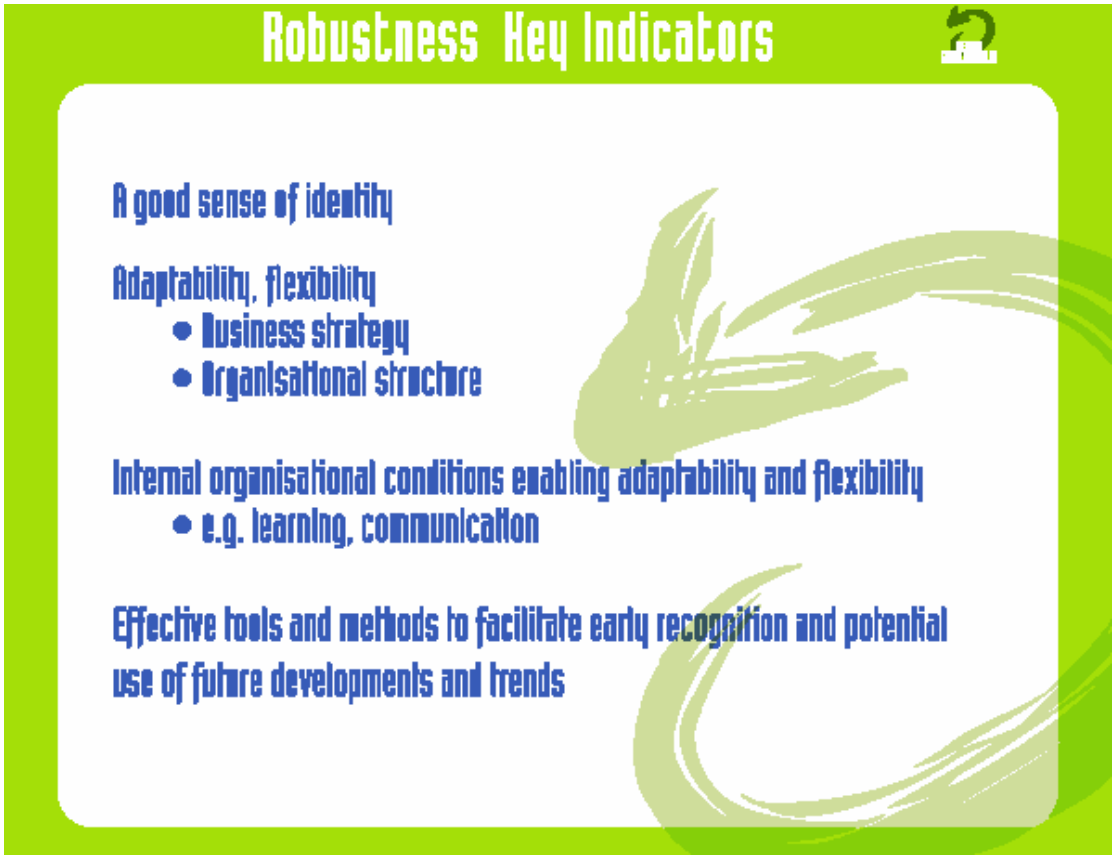
- Every complex adaptive system (CAS) has a history as well as all agents in a CAS (1. Historicity/Time)
- All agents in a CAS are different (also due to historicity) (2. Diversity)
- This diversity lets things/structures emerge bottom-up (3. Emergence/Self-Organisation.)
- The emerging structures seem chaotic at first glance, (4. Pattern recognition) random, but close observation reveals patterns
- We can identify patterns, but we cannot predict new (5. Unpredictability) patterns (as well as other internal/external factors)
- As participants can see in the workshop (6. Edge of chaos), the emergent processes were/are neither completely stable, nor completely chaotic. This “edge of chaos” is where a CAS is most productive.

Link these thoughts to a specific situation of the company.

Flashlight:
The participants then pass a ball to each other; everyone makes a short statement about where he/she has already encountered this principle in the company (principles to be explained are indicated by the person who passes the ball; if someone cannot say something, he/she can pass the ball on). Building up the interrelation of the six complexity principles with the robustness enhancing factors.

Link to robustness enhancers:
Moderator explains: The six principles we have encountered are based on basic insights from complexity science. In order to apply these principles to organisations, we have to look at what these principles concretely mean for an organisation, how they can be fostered and made use of in the business context.

Explanation of robustness enhancers:
Moderator asks: If we put on the lens of complexity now and look at business organisations, what do we have to pay respect to in order to enhance robustness? How can the six complexity principles be facilitated in a business organisation? He/she explains the implications of the six principles for companies principle by principle. While explaining, he/she writes the main findings (good sense of identity, adaptable strategy, adaptable organisation design, enabling environment, good forecasting) on cards and pins them on the wall, too. Alternatively, the following template can be used:



- As you encountered with the principle of historicity, companies have to be sure about who they are and where they have come from, so they need a good sense of identity.
- If diversity shall be enabled, you need an environment that catches this diversity, i.e. good communication structures, a mix of competencies, ...
- If the emergence of structures, but also new ideas shall be supported, you need a strategy that leaves room for emergence, organisational processes that can be adapted to this and an environment that fosters this.
- If we assume that complex adaptive systems show patterns and that pattern recognition is possible to some extent, then this can be enabled by sense-making and anticipation of future events, i.e. strategy formation. A good forecasting of the external and internal environment could give input to this.

Internally, this means also, that an enabling environment is fostered, e.g. that certain patterns in communication are observed and fostered.

- Unpredictability calls for the ability of the company to adapt to unforeseen changes, i.e. an adaptable strategy, adaptable organisational processes and an environment that enables this.
- With respect to the precondition that complexity calls for a position near the edge of chaos, there should be some kind of balance in the strategy and the environment.

Complexity Science Principle	**Organisational characteristics from a complexity science inspired perspective**
History & Time	Good sense of identity
Diversity	Enabling environment
Self-organisation & Emergence	Adaptable strategy, organisational design, enabling environment
Pattern recognition	Adaptable strategy, forecasting, enabling environment (communication, competencies…)
Unpredictability	Adaptable strategy, organisational design and an enabling environment
The edge of chaos	Adaptable strategy, enabling environment, ability to recognise and use new opportunities

Phase 2: Robustness enhancers (45 minutes)

Discussion and concretion of the key success factors (moderated discussion). Moderator asks: what does this mean for companies in detail then?

Elaboration of relevant features of the robustness enhancers

The moderator asks for a specification of the robustness enhancers: what could this mean in detail? This is done by giving every participant a principle (diversity, emergence, etc.) and leaving them some time for reflection. The moderator then pins the things mentioned besides the things already mentioned and asks – if necessary – for explanations. This will produce details such as the following:

- Good sense of identity: you have to identify the core values of your organisation (on the basis of your culture, your core competences, your history, your image)
- Strategy: you have to plan and implement strategy as usual, but in a different way.
This means you have to
- leave room for emerging strategy (allocate resources for this)
- look for sustainability and not just focus on exploiting current business, but also explore
- Management Role: should be very active in this role, either enabling or navigating (depending on the specific situation)
- Organisation design:
- implement flexible business processes so that emerging opportunities can be spotted and leveraged
- facilitate internal networking by fostering and empowering autonomous working of individual employees and teams and by an enabling environment (see below: communication, learning)
- facilitate external networking (e.g. communication, see below)
- Enabling Environment
- foster a mix (teams, units) of different competences and the emerging of new competencies
- foster a learning and communication culture
- implement flexible resources
- performance management should allow experimentation
- Forecasting
- forecast the crucial factors that can be forecasted (with respect to the specific situation of the company)

Introduction to the robustness check (structure/background).

The moderator makes a link to the robustness check by explaining the questionnaires.

Introduction to robustness check
Moderator: All workshop participants have filled out a questionnaire before the workshop. The questions cover relevant aspects of how strongly the robustness enhancing factors are already implemented in the company. In the following (after the break) the main results are presented and discussed by the workshop participants.

Phase 3: Robustness Check (90 min.)
Discussion and validation of results (Moderated discussion). Moderator presents main findings of the robustness check by linking them to the details elaborated before. Starting point will be the sense of identity.

Identifying the sense of identity
The moderator presents the results of the robustness check concerning identity by putting the tree image on the wall and fixing cards with the results on "culture" (what makes working there special?) and "core competences" (what makes it special?) there. He/she revises/discusses them with the

workshop participants. The tree image is then completed by a short brainstorming (cards or flashlight) on the aspects of image and history.

Image: people get different heads (customers, suppliers, competitors) and are asked to make statements about the image
History: short brainstorming on the past.

The moderator pins all comments in the image; the participants than make a prioritisation of the most important aspects e.g. by attributing points. The most important factors about the current identity are then put on an extra slide. The next areas to be examined are strategy, organisation design and environment.

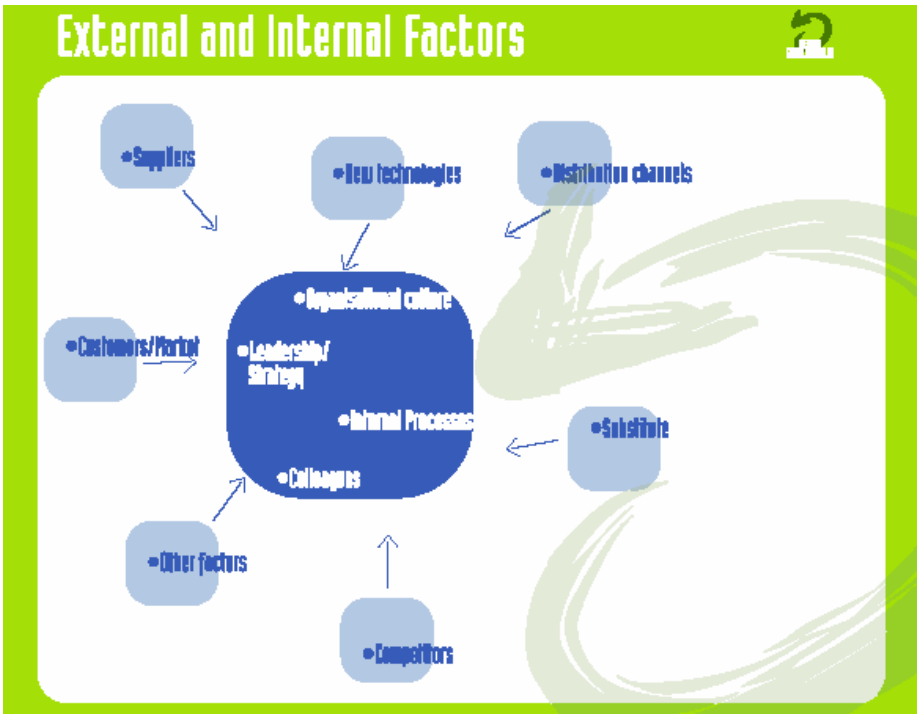
Verification of results on strategy, organisation and environment

Questions to ask:
- Are the results valid? Please give explanations/stories for the facts mentioned.
- How robust is the company already (which of the robustness enhancers are already implemented)? Which factors are not implemented and why?

This input will serve to set up a strengths/weaknesses profile.

Elaboration of strengths and weaknesses

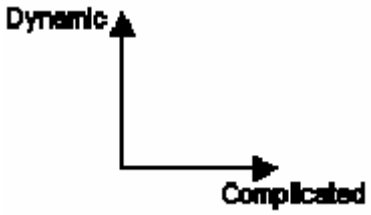
The moderator note, while discussing, the most important internal strengths and weaknesses on cards and pins them on the board under the headings "internal strengths" and "internal weaknesses". This should also pay respect to the different outcomes of the unit and the company as a whole. The following template can be used (this is only an example):



The next step will look at the aspect of forecasting: which factors are forecasted in the company and which not (why)?

Reflection on forecasting

The moderator presents the forecasting assessment and asks for explanation and link to dynamics and complicatedness: "Where is forecasting done and is it done sufficiently here? Why is forecasting not possible in some areas?" (Moderator makes link to dynamic/complicated matrix here) "Are there crucial factors here that could be forecasted or that cannot be forecasted, but have to be dealt with?"



The moderator gives background: remember, the main objective for implementing the so-called robustness enhancing factors (like a good sense of identity, ...) in a company is to achieve robustness in turbulent environments. This means, that there is no ideal, normative model for implementation the robustness in the company. Besides, usually, the company will not be able to implement all of the robustness enhancers in one great change management process. Then a prioritisation of first relevant measures on the basis of what we call the "turbulence check" will be done. The matrix analysed here gives a first impression of the turbulence we are dealing with; now the next step will look into this in more detail.

Introduction to the turbulence check
The moderator explains: The turbulence check will reveal the main internal and external factors your company needs to manage to achieve robustness. The important thing about this check is that it looks at internal and external factors from the perspective of uncertainty: which factors produce the highest level of uncertainty for you and why? Which can be influenced by you, which have to be compensated? The result of this next check will thus be some concrete measures and tools for attacking the burning issues of today and steps for achieving more robustness in the long term.

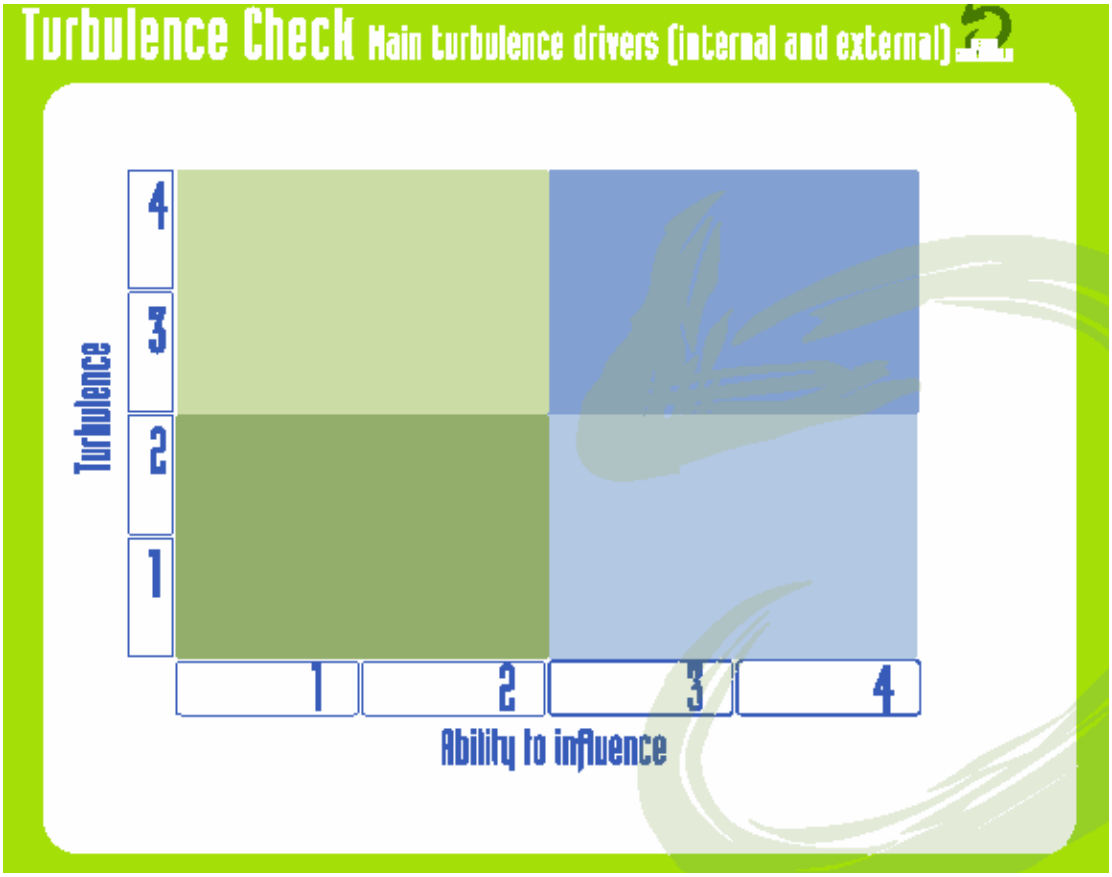
Phase 4: Turbulence Check (90 min.)

I**ntroduction to the turbulence check**

The moderator explains: We have until now learned and worked a lot on the six complexity principles and on their implementation into this company. Please remember: The main objective is to achieve awareness and robustness to deal with turbulent environments successfully. We will now look at the turbulence your company is dealing with.

Industry structure template

The moderator pins the industry structure template on the wall and pins the factors on it that have been indicated by the contact person. The participants shall complete/update this image (maybe by filling out cards in groups of two). This is be accompanied by stories. The moderator then puts up the turbulence matrix and explains it (high-low uncertainty, high-low ability to influence). The following template can be used:



Turbulence matrix

Brainstorming: The participants are then asked to identify the most important internal and external factors they are struggling with. Special emphasis should be given to "hidden turbulence", i.e. which factors seem to be stable now, but will probably change in the future.

Link to next step (revising of robustness check): The moderator explains: "we will now look at how to deal with these factors by means of concrete measures and tools."

Phase 5: Elaboration of measures and tools (90 min.) In a moderated discussion, concrete measures and necessary tools are now derived.

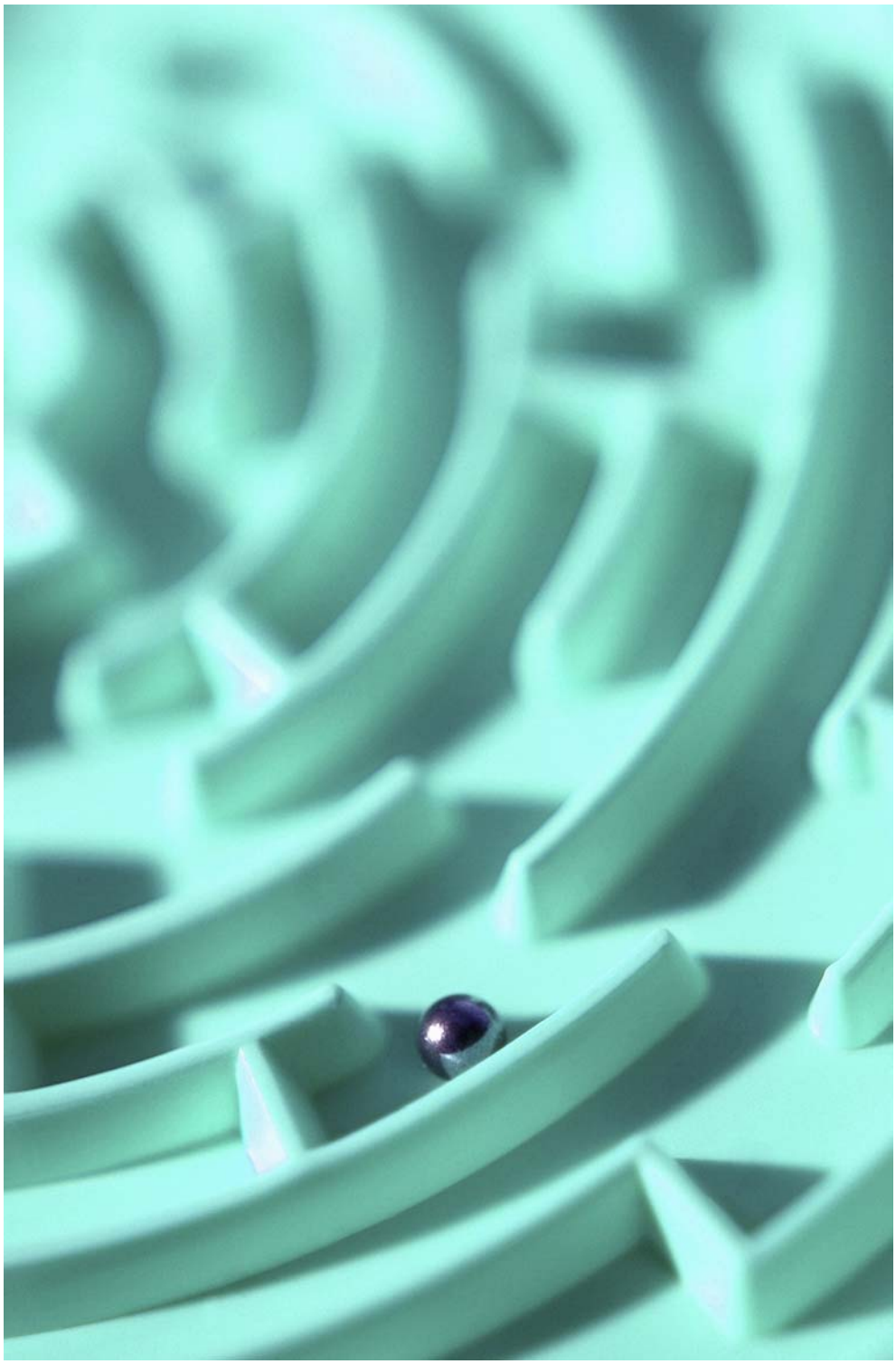
Revising the robustness check (comparison of turbulence matrix with robustness results). The moderator compares the robustness enhancers (step 4) with the elaborated strengths/weaknesses (step 3).
Questions: "What can we change to cope with the turbulence drivers? Which factors can we influence directly and which do we have to compensate? Which factors can we forecast? What impact does our identity have on this and how may our identity change? While discussing, the moderator catches concrete measures and necessary tools.
Prioritisation: When all input has been caught, the most important measures are identified by prioritisation and the necessary tools discussed. Elaboration of a roadmap; conclusion of the moderator.
Roadmap: A roadmap with relevant measures/responsibilities/deadlines is elaborated. This could also include the application of further RODEO tools found in the Tool Guide such as CompetencyDaq or the Opportunity Exploration Kit. The moderator then asks for feedback.
Cool-down: Feed-back (10 min.): Short feedback round: fun/effectiveness or interesting/effective matrix: "How do you feel about the workshop today?"

The next chapter explains the next part of the RODEO Process that follows on from and makes use of output from the Context Analysis Kit – The RODEO Tool & Method Guide.

CHAPTER 14

THE TOOL & METHOD GUIDE

**By Dorothee Frielingsdorf,
Patrick Klein & Liza Wohlfart**



The RODEO Tool & Method Guide contains a range of existing and newly developed instruments, to support companies in achieving robustness.

Summary

The Tool & Method Guide provides further support for you on your journey towards robustness. It offers:

- a repository of traditional and innovative new tools to support specific aspects of robustness
- an innovative three-perspective route to these tools that makes it easy for you to identify the specific tools you need
- guidelines for the evaluation or development of your own tools with respect to robustness.

Content and Key Learning:

The Tool & Method Guide helps you to identify the appropriate tools and methods you need in an easy and innovative way that is coherent with the Rodeo Process. Therefore it uses a three-perspective route:

Route 1: Functional Area Perspective

- shows you tools/methods for one specific functional area:
  - organisation,
  - strategy and forecasting
  - human resources
- gives a distinct overview on all tools/methods in the repository

Route 2: Complexity Principles Perspective

- shows you tools/methods from the perspective of RODEO's six complexity principles:
  - indicates, which tools specifically support certain complexity principles
  - explains, how certain tools incorporate specific complexity principles

Route 3: Business Challenges perspective

- shows you tools/methods according to typical challenges companies in turbulent environments have to face (maybe they are similar to the ones you are struggling with?):
  - provides an overview on typical business challenges in turbulent environments
  - shows you, which tools could be useful for dealing with them

In addition to this, the Tool & Method Guide gives you guidelines for the evaluation (and integration in the repository) of the tools and methods you already use as well as the development of new tools and methods.

Overview & Benefits

- Intuitive and dialog oriented access to a tools/methods repository
- Supports the follow up process of the RODEO Context Analysis
- Offers the possibility to individually update and enlarge the tool repository

- Relates to typical real-life business situations
- Supports the selection and evaluation of methods/tools grounded in complexity science principles

The RODEO Tool & Method Guide is directed at:
- Users of the Context Analysis module
- Tool/method developers who want to check the linkage of a specific tool to complexity principles
- Strategy teams and managers who want to identify tools for a specific business challenge

Links to other parts of the RODEO Process:

The Tool & Method Guide enables users to find appropriate tools/methods related to their specific context (STEP 2: Context Analysis) and with respect to the 6 complexity principles.

Tool & Method Guide logistics – What is involved?
- Users only need to "view and click" to find a list of appropriate tools accompanied by evaluative information.
- The Tool & Method Guide can be easily accessed via the Internet with all conventional browsers.

The Tool & Method Guide in More Detail

In line with the three phases of the RODEO Process, each phase is supported by an individual module:

PHASE 1 "Awareness Creation" is supported by MODULE 1 "Complexity Starter Kit"

PHASE 2 "Context Analysis" is supported by MODULE 2 "Context Analysis Kit"

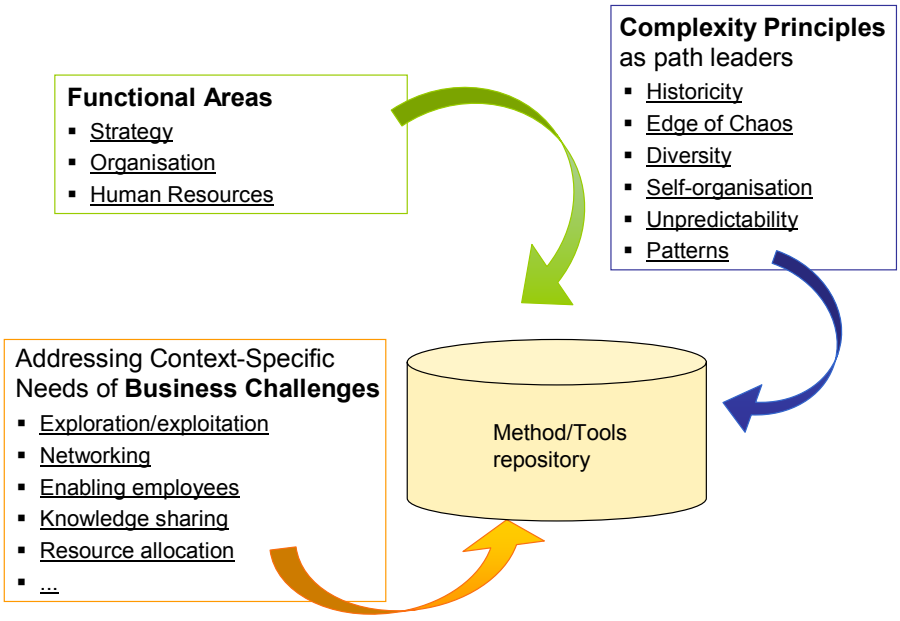
PHASE 3 "Tool Selection and Application" is supported by MODULE 3 "RODEO Tool & Method Guide"
Here we describe the concept of MODULE 3 the "RODEO Tool & Method Guide" as a repository of tools. The RODEO Tool & Method Guide consists of a repository that provides selected existing tools and new tools that were developed during the RODEO project (CompetencyDaq and the Opportunity Exploration Kit) for the three functional areas RODEO focuses on, which are strategy formation, organisation design and human resources management.

Objective of the RODEO Tool & Method Guide

The RODEO Tool & Method Guide provides a range of tools and methods to support a company in enhancing its robustness. The tool as a whole comprises the three functional areas RODEO focuses on: strategy, organisation, and human resources. The basic idea of the RODEO Tool & Method Guide is not just to provide a set of tools according to a defined request, but to make a pre-selection of tools/methods and to give additional

(guiding) information from a complexity perspective. Thus the approach applied in the RODEO Tool & Method Guide reflects the RODEO focus on the 6 complexity principles.

The difference to existing method repositories is not the uniqueness of the provided tools itself, but the way to access these tools – the way to find an appropriate tool for a specific problem or a specific "business challenge" and the way the tool is presented. Whereas methods & tools repositories often only provide access through one dimension, the RODEO Methods & Tools Guide provides three alternatives in parallel:



Three-dimensional access to the tool/method repository

This three-dimensional access (as schematically shown above) allows the user to find potential methods & appropriate tools that fit to their specific needs elaborated in the second module of the RODEO Process, the Context Analysis Kit. A detailed description of the different perspectives is given in the following chapters.
The development of the RODEO Tool & Method Guide focused on the classification of tools (and the enabling of their selection) and not the development of tools themselves.

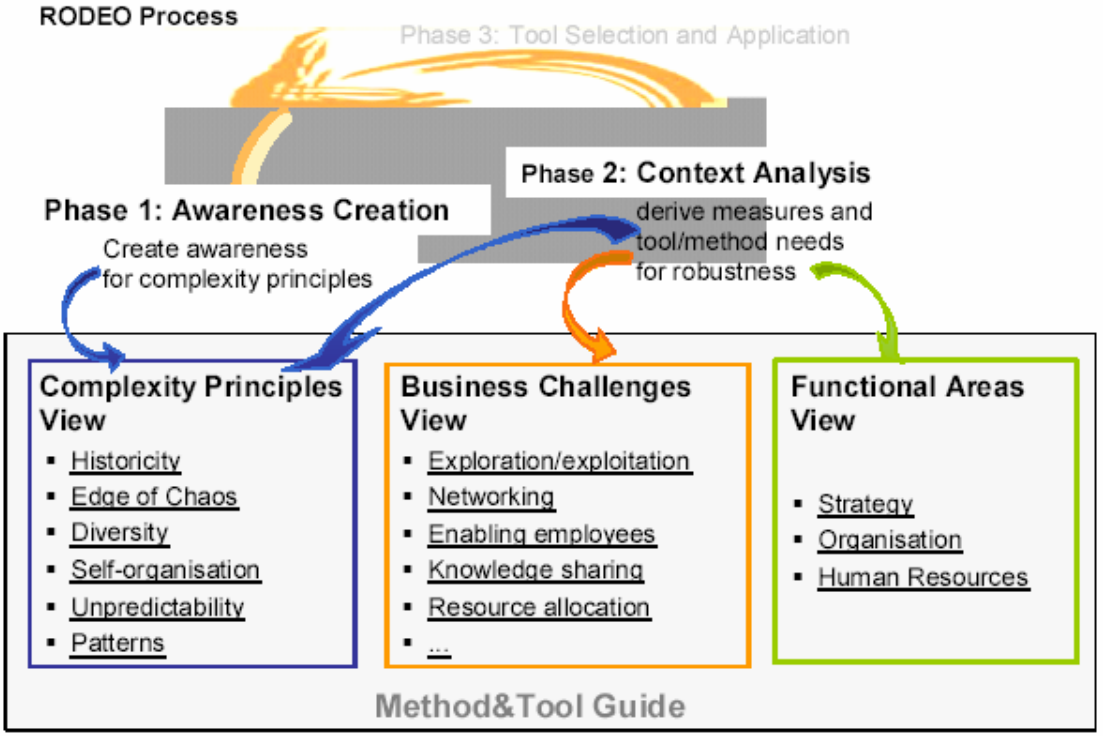
Existing tools were scanned with regard to their suitability for the RODEO context. These tools are the initial input of the repository itself. Furthermore, the tools that have been designed along the course of the RODEO project (the CompetencyDaq, and the Opportunity Exploration Kit) are part of the repository. For the tools in the repository, the RODEO Tool & Method Guide will deliver a possibility to identify their individual approach and their potential value from a complexity science perspective.

Since all tools are described on the basis of the same categories, the proposition process of the RODEO Tool & Method Guide offers the existing tools along with the newly developed ones in the same way. Tool/method

developers can therefore also make use of the RODEO Tool & Method Guide to check how the specific tool matches the six complexity principles.

Relation to RODEO Process

The RODEO Process consists of three phases building on each other: “Awareness Creation”, “Context Analysis” and “Tool Selection and Application”. As shown below, the three ways of access the RODEO Tool & Method Guide offers reflect these different phases.



Graphical representation of link to the RODEO Process

As the above figure illustrates, the second phase has the strongest link to the three views of the Tool & Method Guide and is the phase that precedes the application of the Guide. The process of the tool supporting the second phase (“Context Analysis Kit”) is important to understand its relation of the Tool & Method Guide, so a short reminder of it is needed.

The Context Analysis Kit is a four-step workshop to enhance a company's robustness. At the beginning, the Context Analysis Kit picks up on the contents of the Complexity Starter Kit through a recap of the six principles the RODEO Process is based on. In a work session, the second step then links these principles to the business context by presenting the "robustness enablers" that make a company more robust (as identified in RODEO), an adaptable strategy (incl. forecasting), an adaptable organisation and an enabling environment (with a special focus on human resources and the identity of an organisation). These robustness enablers are then elaborated according to how they are currently realised in the company ("what is the current strategy like?) and what their implications in detail could be ("what could an adaptable strategy look like?). The latter is done with reference to

the six principles that form the basis of the RODEO Process (by attributing principles hats to the participants).

A second work session (step three) then starts with an introduction to and discussion of the notion of turbulence to then take a close look at the turbulent factors the company is struggling with ("turbulence check). The most crucial factors are then chosen to be worked on. The third and last work session then brings the notion of robustness and turbulence together in looking at how the company can deal with the crucial turbulence factors on the basis of the elaboration of the robustness enablers in the second step, so a special focus is on the six principles again here. This step ends with the identification of necessary measures concerning the key turbulence drivers and the setting up of an according actions list.

As described above, the three work sessions of the Context Analysis Kit are of an analytical nature and focus on the identification of necessary measures for robustness. These measures do not automatically constitute the need for a further method or tool, since in some cases the derived measures will be concrete actions that can be implemented straight away on an operational level. Some measures derived in MODULE 2, however, will benefit from a further methodological support by means of appropriate tools or methods, or further tools may be even essential for them. This is where the Tool & Method Guide becomes crucial, as the user can use it after having accomplished the second module to choose appropriate instruments for this.

Concept of the RODEO Tool & Method Guide

As mentioned above, the RODEO Tool & Method Guide contains three different perspectives, which determine its structure and access points.

Functional Area Perspective

The first perspective incorporates the three functional areas that define the scope of RODEO: strategy formation, organisation design and human resources. As this structure is very common for a tool box structure it is supposed to give the user an easy access and orientation along with the other aspects of Tool & Method Guide that might be new to the actual user.

Business Challenges Perspective

The second perspective refers to typical business challenges that companies in turbulent environments could face. These typical business challenges have been identified on the basis of the industrial case studies. At its current status the Tool & Method Guide focuses on five main business challengeș:

- Exploration/exploitation: how to decide where and how to explore and how to balance this with exploitation
- Networking: how to handle a network, how to harmonise strategies
- Enabling: how to enable employees and make them entrepreneurs
- Knowledge sharing: how to share (generalised) knowledge between employees

- Resource allocation: how to allocate people according to their competences

The different tools collected for (and developed for) the Tool & Method Guide repository are analysed with respect to the support they give for one of these business challenges. The challenge of "enabling" (how to enable employees and make them entrepreneurs), could e.g. be supported by Coaching and Mentoring, two methods explained in the repository. "Resource allocation" (how to allocate people according to their competences) could be supported by the CompetencyDaq, one of the tools developed by RODEO that is also part of the repository.

This business challenge related perspective was realised with respect to two intentions: It is meant to show, which tools refer best to a certain business challenge. This helps companies to find appropriate tools if they face a similar challenge; Secondly, it relates how certain tools correspond to the business challenges. This helps companies to evaluate e.g., how tools that are already in use fit to the business challenge.

Complexity Principles Perspective

The third perspective is the aspect of the RODEO Tool & Method Guide that differs most strongly from other tool repository approaches. As the RODEO Process as a whole is based on six complexity principles, it is obvious that also the selection of the tools and methods for supporting the further robust business development should refer to them. The decision to draft the complexity-related perspective was done because of two intentions. Firstly, this perspective should show, which tools refer best to certain complexity principles. This helps companies to choose a set of tools to foster certain principles, e.g. support the principle "emergence/self-organisation" in their human resources. Secondly, it should help companies to evaluate how tools that are already in use fit to the complexity principles that the company wants to support.

According to the objectives described above a main value of the Tool & Method Guide is the possibility of having a new lens on existing tools (of having additional evaluation criteria for them). Obviously this can only be an added value if the principles view or their linkage to appropriate principles respectively is based on rational criteria and not only on gut feeling.

Thus when bringing the complexity principles perspective to life, guidelines for the evaluation of tools were first derived in a two-step process. First of all, each complexity principle was interpreted from the “practical” view given by the specific functional areas: What do the complexity principles mean for the functional area, or how can the functional area be interpreted with the lens of a certain complexity principle? The principle "emergence" e.g. means for strategy (as a functional area): "an enabling environment to foster and handle emergent strategies". The emergence related interpretation for organisation as functional area would be "self-organisation". So for each complexity principle a specific interpretation related to each functional area was done. In a second step, guiding questions were deduced from that to evaluate the tools

& methods. In addition to strategy as functional area, separate guiding questions were formulated for the (sub) area, forecasting.

The guiding questions help to evaluate tools/methods in terms of how the tool corresponds to each complexity principle (CP); namely if the tool:

- \+ supports the CP
- o is neutral to it (or easily extendable to this)
- \- in conflict with it (as the underlying assumptions of the tool contradict the CP)
- x reduces the degree the CP is fulfilled (only relevant if CP is a balance field)

Since the basic idea is not to just select a set of tools according to a specific request, but to make a pre-selection of tools/methods and give additional information from a complexity-perspective, a tool could be recommended as long as it assessed by "+" (supporting) or "o" (neutral, easily extendable). Remarks concerning the extension/adaptation of tools are given as comments to each single tool.

In order to ensure that the guiding questions are understood correctly, indicators/indicating questions are used as additional information. The objective was not to cover the whole interpretation fields, but to make them as concrete as possible. For example, the principle emergence has these indicators for the functional area organisation: informal organisation, group dynamic processes, etc.

The table below gives an example for the guiding questions of the functional area strategy. As a tool/method to be evaluated, the "Balanced Scorecard" was chosen. The BSC is a tool that is quite often implemented in big companies as well as in SMEs, but was not selected to be in line with the Rodeo approach. Thus by the tool guide assesssment, a company that already uses the BSC gets the information that this tool is in conflict with several complexity principles. Especially the neglection of emergent strategies (in contradiction to the emergence and the edge of chaos principle) and the neglection of unpredictability are seen to be critical. Other principles (historicity and patterns) could be incorporated if the BSC implementation is adapted and handled with care. As a result, the BSC would have to be discarded if a company faces a real high level of unpredictability. In other cases, it could be adapted and supplemented by measures that compensate its weaknesses e.g. concerning emergent strategies.

B=Balance Field	**Historicity**	**Emergence *B***	**Diversity *B***	**Patterns**	**Unpredictability**	**Edge of Chaos**
Strategy						
CP related interpreta-tions and concepts	Consider Identity to decide on different strategic options: "where you come from influences what you can be"	Enabling environment to foster and handle emergent strategies Comment: has to go along with organisational requirements	Involvement of diverse expertises (in broader sense: exploration/ strategic options)	*Patterns between strategic options (e.g. common requirements, risks)*	If a high degree of unpre-dictability is given, forecasting is nearly impossible,/ must be compensated by e.g. strategic options.	Balance between exploration und exploitation strategies
Guiding Questions Strategy yes + partly o no - reduced x	**Are identity-related implications considered?** **Do M/T consider experiences (LL) from the past?**	**Are emergent strategies supported?**	**Does the M/T consider different expertises in parallel?** ***(Does the M/T consider different strategic options in parallel?)***	**Does the M/T recognise/analyse patterns in the sense of interrelation and structures of strategic options?**	**Do the M/T adequately handle uncertainty?**	**Do M/T help to balance exploration and exploitation?**
Strategy Indicators	- Definition of the company's identity - Fit between strategic options and company's identity - Use and elaboration of experiences (e.g. lessons learned)	- Management role (enabling, navigating) - Hierarchical levels that are involved in strategic decisions (→ self-organisation) - Personal responsibility of staff members/ units concerning strategic decisions/ e.g. resources for implementation of new strategic options (innovations) - Transparency of strategic decisions	- Diversity of data/facts considered - Perspectives considered - Departments involved - *Openness with respect to number of scenarios that can be considered* - *Degree to which scenarios/ options are different*	- Criteria for option/ strategy description - Description of further implications of options/ strategies - Recognition and recording of structures and interrelations/ coherences	- M/T may not relay on discrete data / must handle more fuzzy data and/or different options - Do not focus on calculated probabilities, but evaluates strategies along different scenarios. - Flexibility of strategic decisions. - Irreversible costs of strategic options - "Place your bets"-attitude	- Differentiation of exploration and exploitation resp. planned and emergent strategies - Support of changes in both directions (increase exploitation or exploration)
Balanced Score Card						
Assessment	o	–	+	o	–	–
Comments	Identity could be considered, if it is already clearly enough defined. Could be broken down to perspectives of BSC.	Core idea is that strategies are deduced from central vision/ strategy, only planned strategy considered, no flexibility for emergent strategies.	Different perspectives support (require) the involvement of different expertises.	Patterns are considered to some extend as BSC tries to give a coherent struc-ture between strategy, sub-strategy and required resources (measures).	No, BSC is strongly basing on direct cause-effect relation-ships between strategy – objective and measure, normal timeframe is one year, adaptations are not provided in the concept.	No differentiation between exploration and exploitation resp. no emergent strategies possible.

Using the RODEO Tool & Method Guide

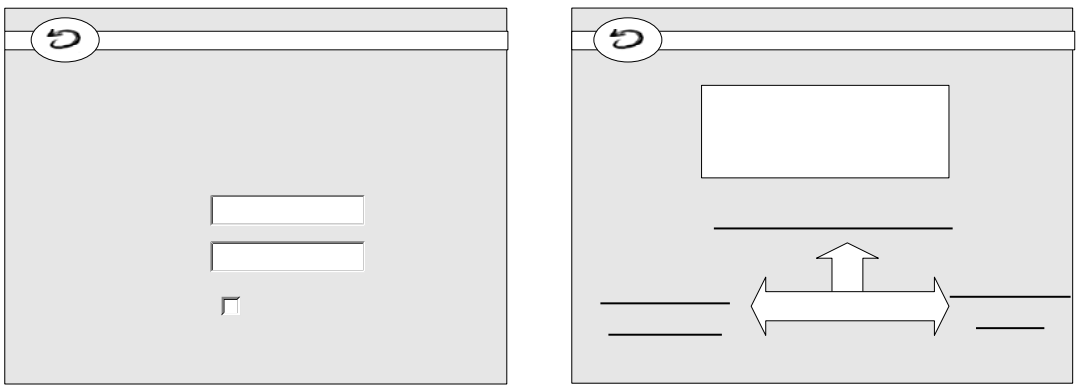
Even if the RODEO Tool & Method Guide approach concentrates on the tool selection and not on the tools itself, the value of the RODEO Tool & Method Guide increases with the number of tools deposited in the repository (otherwise – even an excellent structure - would lead the user to the result *no tool available)*. Therefore one of the main challenges for the development was to consider a possibility for “non RODEO specialists“ to fill up the RODEO Tool & Method Guide repository with appropriate tools. This means the RODEO Tool & Method Guide approach has to consider two points:

- Selection of appropriate tools
- Classification and integration of new tools

The basic idea of the RODEO Tool & Method Guide architecture is to develop a unique structure for the tool repository fulfilling these two tasks in parallel. The criteria for classifying new tools are based on the same characteristics for finding the tools in the repository.

Tool Selection Area

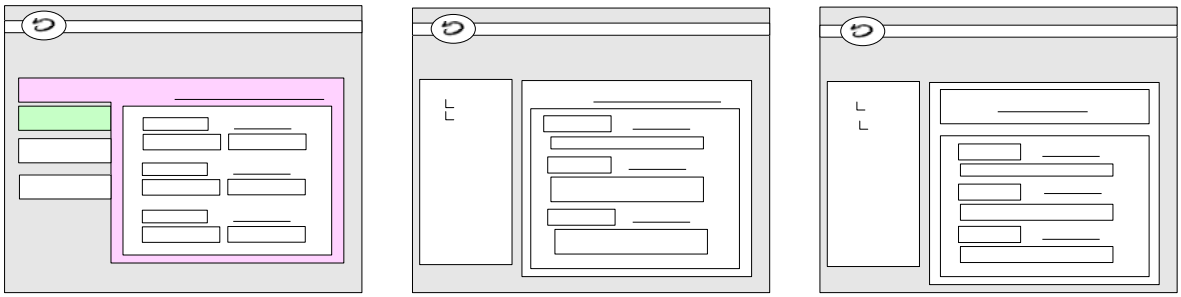
In order to develop a controlled access to the repository the *user* entity has an attribute *USER_adminrights* enabling any user having permission to insert new tools in the repository. The same structure for selection and insertion of tools is used two access points are provided with the same login: The user can tick a box to get an administration log in and is enabled to insert tools if system has validated the permissions by checking a *USER_adminrights* flag. A first draft of the functional elements envisaged to be developed for the Tool & Method Guide is shown in below:



Functionality: Login box and Selection of Repository View

The right screen shows the login with a possibility to log in as an administrator to insert new tools. The left screen shows a possibility to select between the three Tool & Method Guide accesses to the tool repository. It is intended to give additional advice via text boxes to explain advantages/objectives of each view, to support the user for selecting the best view.

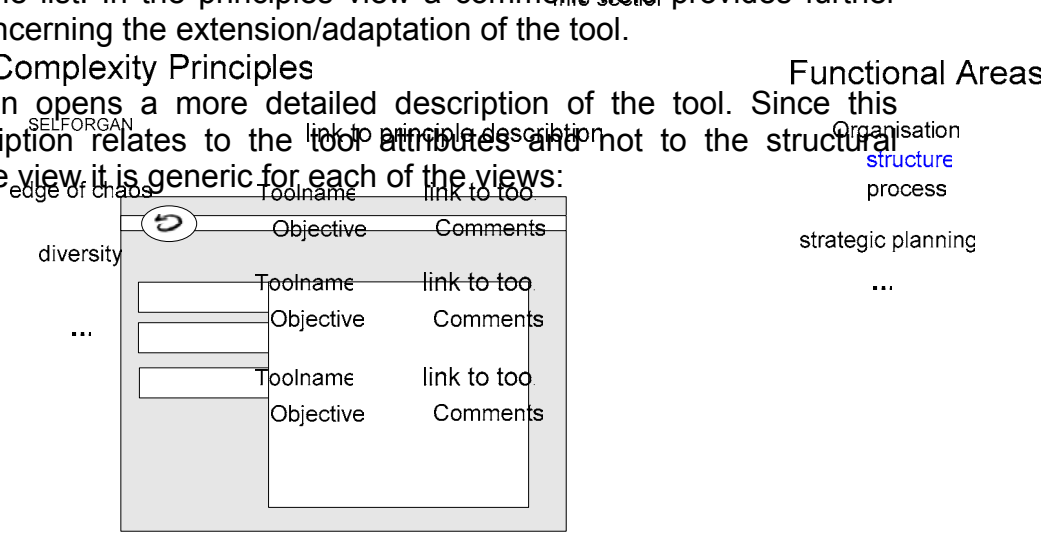
After selecting a view the respective screen will be provided to the user. In the figure below the different views are faced to each other. In each view the structural elements are positioned in the form of a menu area on the left side and the tools appear in the form of a list in the section at the right. Since the structure is slightly different the menu areas differ as well: the pop-up colours are related to each of the principles.



Functionality: Complexity Principles, Functional Area and Business Challenges view

For reasons of clarity, only the name of the tool and the objective of the tool is presented in the list. In the principles view a comment field provides further information concerning the extension/adaptation of the tool.

A linked button opens a more detailed description of the tool. Since this detailed description relates to the tool attributes and not to the structural elements of the view it is generic for each of the views:

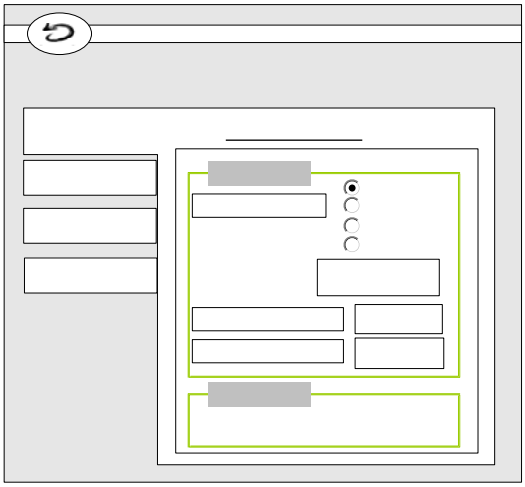


Functionality: detailed method/tool description

Administration Area

The administration section facilitates the insertion of new methods and the editing of existing methods. In addition, the editing of the areas itself can be administrated as well as the different business challenges. Different forms enable the objective, the needed input, etc., the outcomes to be entered.

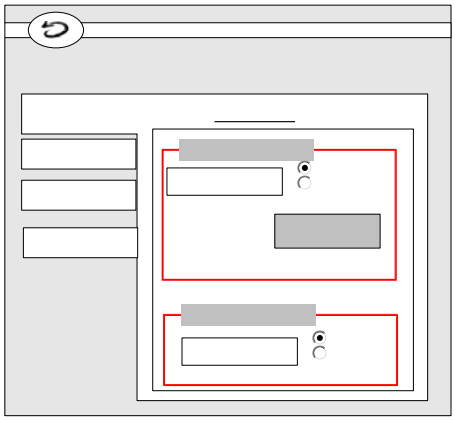
Since each method is associated only to one area to enable the user to get a clear picture of the tools existing in the repository, a single choice tick box links the new tool/method to an area. Since the linkage to the relevant business challenges or appropriate principles is crucial, two separate wizards support the user, which can be directly accessed from the forms. The figure below shows the functional elements of the administration section of the guide:



Functional elements: Insertion of new methods/tools

The Business Challenges wizard

The Business Challenges perspective links the (newly defined) methods to the existing business challenges. As seen in the next figure the business challenges wizard only allows a single choice if a method belongs to a business challenge. But a method could be useful for several business challenges, therefore the link to each challenge has to be defined separately.



Functional elements: Business Challenges wizard

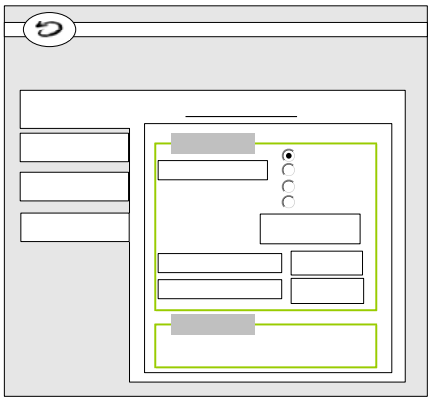
The Complexity Principle wizard

The above described evaluation scheme is transferred into the forms of the Complexity Principle wizard. The guiding questions provide and the user can rank the tool (which is to be inserted) by tick-boxes. The indicators/indicating comments are displayed here as well.

While scanning the existing tools regarding their suitability for the RODEO context it turned out that some of the tools could be extended/adapted without loosing their core ideas in order to fulfil the requirements for supporting a specific complexity principle or a specific interpretation-field. Since such an adaptation could be extremely helpful in certain situations of a company it is

possible and desired to insert remarks concerning the extension/adaptation of the tools if possible. The wizard includes samples and hints to support the user in adding comments.

Since a method could be relevant in the context of several complexity principles, the link to each complexity principle has to be defined separately.



Functional elements: Complexity Principle wizard

The next two chapters introduce the two RODEO Process tools, CompetencyDaq, and the Opportunity Exploration Kit.

Administration

New method

Edit method

Edit areas

Global settings

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CHAPTER 15

COMPETENCYDAQ

By Silverio Petruzzellis

RODEO CompetencyDaq aims to provide an enabling environment for innovation and creativity through which it could be possible to analyse the overall competency profile of an organization, in real-time, while those competencies are emerging and evolving. Business development activities need to be constantly adapted to the changing environment. The ability of an organization to optimise its approach deeply depends on its employees and management behaviour that emerges through their interaction with each other in the context of business activities.

The RODEO CompetencyDaq concept rests on the fundamental observations that:

• The value of peoples' competencies is actualised when those competencies are recognized and exploited in the context of an organization's business activities.

• These activities are parts of the dynamically evolving processes of the organisation and its environment that emerge from the interactions of the people engaging in it.

The CompetencyDaq tool will help capturing and rating the events that manifest individuals' competencies on a day-to-day basis, starting from the assumption that there are tens of different situations in which we provide and make use of information that trigger our innate aptitude to rate and value the supporting interaction as useful or not: from formal and informal conversation; to e-mail exchange; and, written communications.

CompetencyDaq's goal is to make use of this common behaviour to collect information and feed an open rating system in order to create a self-regulating market of competency stocks (CompetencyDaq, like Nasdaq or BBC CelebDaq, a fictitious celebrity stock market).

The tool's founding elements are the single competencies, considered as the union set of trainable knowledge and evolving skills. These competencies are variably present, available, and potentially emergent within an organization, through the applied and evolving knowledge of its interacting employees and managers who can be considered as owners of a certain amount of different competency "shares" gained through a standard evaluation process.

The organization competency map can then be viewed as a fantasy competency stock market in which each competency has just completed its IPO (initial public offering) and an initial amount of shares has been distributed among employees according to their assessed expertise.

Starting from an initial set of competencies, the so-called "skill inventory", the results of the most recent assessment of each individual's ability in the fields described by each competency can be used to describe an initial "portfolio" for each assessed individual within the organization.

Competencies have to be exploited through ROI-generating activities to be considered valuable for the organization, so the expertise must be somehow confirmed with new evaluations. Time can then be considered as a contributing factor to the natural impoverishment of the competencies' portfolios. A rating mechanism activated on a voluntary basis can help the competencies to be constantly evaluated in order to refuel the portfolios.

RODEO CompetencyDaq provides such a mechanism, and allows people who interact with us and experience our socially-constructed competency exploitation activities, to perform micro-assessments by rating events and interactions in terms of a certain group of expressed competencies.

To this goal, all the participants are given a fictitious currency and a certain amount of money to be spent through the rating system, equally distributed among the participants. By means of the CompetencyDaq tool interface each participant has the opportunity to rate interactions, suggestions, advice, or any other event demonstrating a competency effectively applied: participants assign a fixed small amount of the fictitious CompetencyDaq money to the person manifesting the competency, through a mechanism similar to the Amazon Honor System or the PayPal service5.

CompetencyDaq actually creates a framework to make the interaction flows emerge and to let the competencies applied in day-to-day working activities be credited.

The price of a competency share is a factor of its value within the organization - representing the need of this specific competency - and of its availability among the employees - its market share.

The more a competency is required and the more it is missing within the organization, the higher its price. To provide evidence of a specific need of competencies, CompetencyDaq applies the concept of “bids” in order to feed the system with information regarding their values as perceived by the organization. A bid in the context of CompetencyDaq could be interpreted as the willingness to spend a certain amount of fictitious money to make use of a certain competency or group of competencies. Its goal is not to alert other people about the need but to modify the internal balance of the market of competencies. In other words, the need will always be declared to the tool’s engine that will use it to modify the price of the shares.

To make the whole system of instant evaluations and requests valuable for the participants, a dedicated communication channel between the system and each user could be conceived.

This channel could take the form of dedicated mailbox addresses (one for each participant and one for the system), or any other digital equivalent.

The goal is to let the system act, above all, as an advisor for its users, providing them with just-in-time advice on the requested subjects in several different forms. Targeted content delivered through the channel to a user showing interest in a certain expertise for example, can be made of the current quote for the related competencies, indicating who owns the highest value. This information is the result both of the instant evaluations and of the requests and is constantly updated by the system according to those values. Additionally, provided that the CompetencyDaq rating mechanism could be used to evaluate any kind of content digitally available, selected rated content can be provided to address a certain specific request.

A person’s CompetencyDaq portfolio can also be valued according to a competency type not yet included in the inventory of competencies. The CompetencyDaq interface would permit the adding of a new competency type that will be considered as a candidate for “newly catalogued competencies”.

The new competency could be accepted in the inventory if a certain amount of credits is given to people related to this competency, enough to overcome a predetermined minimum threshold. To make the new competency emerge, the CompetencyDaq rating interface could present a list of most recently added competencies in order to make people aware of its existence. On the other hand, scarce interest in a given competency could make it disappear from the list altogether because of the evolving obsolescence of the shares in question. As well as the newly added competencies, the most frequently and highly credited competencies (e.g. the "CompetencyDaq Top 5") could be listed separately.

The dynamic management of the skill inventory helps to keep it up-to-date and, above all, always in line with the actual activities in which people are involved.

The Link to Complexity Science and the 6 Principles

Much more than a standard formal assessment, the mechanism of instant rating available through CompetencyDaq enhances the **power of interactions** to foster innovation. Neighborhood relationships help people in spotting new opportunities and make the whole process of capturing and exploiting expertise much more effective.

Furthermore, the open structure of the skill inventory provides a framework to foster the expression of **diversity** and challenges the top-down strictly job-oriented approach of the standard competency evaluation. By leaving the participant free to design and manage the organisation's competency map bottom-up in fact, a more realistic analysis of the skills actually involved in the day-to-day activities will help spotting new opportunities out of the static pre-defined picture. The new competency map is **emerging** through the instant rating framework from the continuous interactions happening among the participants and not from a process oriented top-down analysis.

Another interesting result coming from CompetencyDaq could be the possibility to spot new or existing **patterns of competencies** applied altogether to successfully perform a certain activity. Standard evaluation systems allow for the design of competency profiles associated to a specific job description. These profiles are commonly designed using ideal templates and never from a bottom-up discovery of people aptitudes. CompetencyDaq instead could help in discovering how the various competencies are applied together: whenever a certain pattern of competencies happen to be particularly frequent in the ratings, this pattern could emerge and presented to the users to be used for ratings. It could be named and proposed as a standard way of "naming" a group of competencies whose application gains a specific meaning at a higher level. CompetencyDaq could in other words help to discover how competencies **"self-organise"** within a single individual's or a group's behaviour to provide specific contributions to the business activities. Through the continuous rating mechanism, the possibility to foster and spot self-organisation activities can be brought down to the very basic level of competencies, giving the opportunity to understand how both successful teaming and individual activities are performed through the exploitation of single or grouped abilities.

Robustness

Though not designed to be a decision-support tool, CompetencyDaq could give useful hints to design a detailed development plan for the organization starting from its most valuable asset: people – people in interaction with other people.

CompetencyDaq aim is to foster adaptability and flexibility through the emergence of applied competencies on the field that can be hindered by codified processes. The self-organising competency map can therefore reflect the organisation's identity by the continuous observation of activities that manifest the application of individual's skills and knowledge.

Business Areas

Like any other competency evaluation tool, CompetencyDaq can act as an alternative performance management tool, to be used in parallel with standard ones. Though conceived mainly as a game, borrowing the stock-market metaphor to foster interactions and support creativity and innovation, CompetencyDaq can provide useful hints through the analysis of several indicators (from competency market share to stock average value just to name a few) that could guide managers in designing strategic development initiatives.

Furthermore, at an organisational level, CompetencyDaq could provide evidence of interactions not codified within the organisational charts and foster the adaptation of the organisational structure in order to better cope with unexpected events.

Competing/Similar Concepts

Standard competency evaluation systems use well know assessment methodologies (ranging from self-evaluation to 360° evaluation) to associate a rank to each single individual that is often evaluated against a pre-defined target competency profile. Evaluation activities are generally performed yearly (or twice a year at best) and they are based on an overall analysis of the task performed and of the general behaviour of the individual during the time period under evaluation.

Although widely adopted, this approach bears several drawbacks:

It focuses on **high-level perception** of people aptitudes rather than on their actual involvement in activities that allow for their competencies "activation".

It generates a certain degree of **stiffness** in the overall picture of the organization's competency map, since the picture coming out from the evaluation process is difficult to be modified outside the formal evaluation schema.

It hinders the exploitation of **emergent competencies** because it lacks a feasible instrument for the follow up analysis of day-to-day activities under a competency evaluation perspective.

Its intrinsic rigidity is also due to the fact that competency evaluation is usually made in the form of comparison of people capabilities against a **pre-**

determined target profile and thus forced to fit a fixed evaluation schema to make this comparison feasible.

CompetencyDaq aims to shed a different light on the competencies evaluation process by capturing and rating the events that make someone's competencies apparent on a day-to-day basis rather than within pre-defined and scheduled evaluation events. Through this approach it also aims at building a collective picture of the organisation's competency map, allowing for a bottom-up emergence of skills and knowledge actually exploited through business activities.

Software Specifications

The CompetencyDaq tool idea lies on top of a standard software tool for competency evaluation, enhanced by adding a number of different features to allow for the instant rating and market analogy implementation.

CHAPTER 16

THE OPPORTUNITY EXPLORATION KIT

By Atai Ziv

The **RODEO Opportunity Exploration Kit** is an optional tool offered in the third phase of the RODEO Process. The Opportunity Exploration Kit is a one-day workshop in which existing and emerging opportunities are mapped and analyzed based on the lens offered by the 6 complexity principles. The main objectives are to help organisational stakeholders gain a better understanding of specific opportunities, and to facilitate transitions and changes associated with the opportunity development process. The tool should be used by participants who have already experienced and developed an initial understanding of the six complexity principles through the Starter Kit and have already witnessed how the company can enhance robustness and cope with a turbulent environment after taking part in the Context Analysis Kit (see figure 1 – next page) .

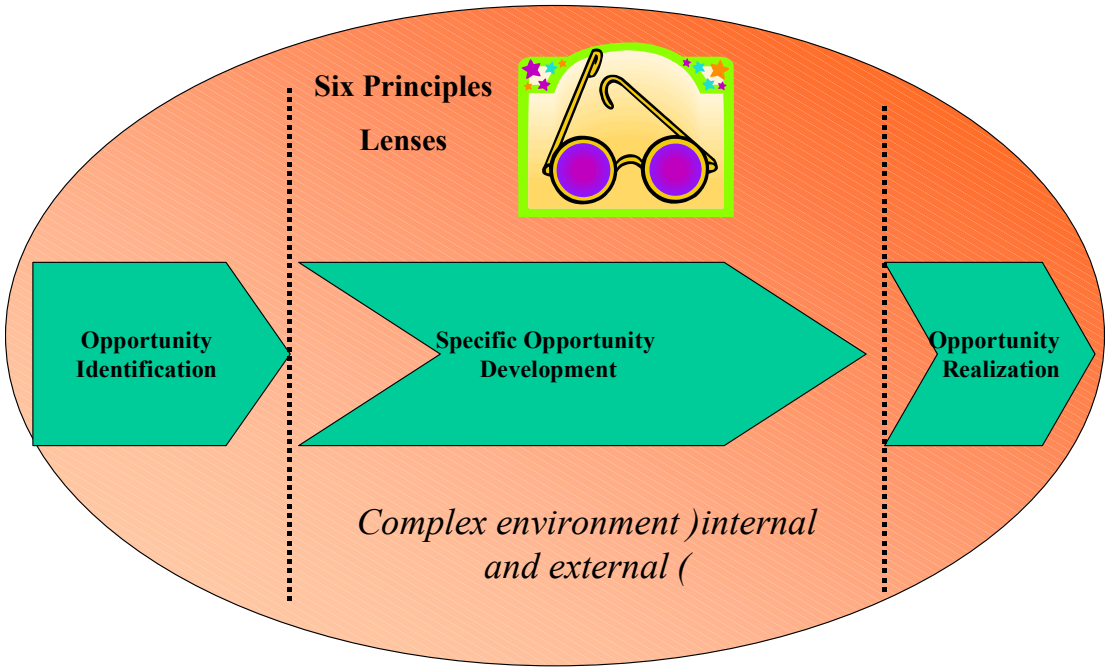


Figure 1: Opportunity Exploration frame in the opportunity development process

The RODEO Opportunity Exploration Kit will help you to

- Gain a better understanding of specific opportunities
- Facilitate transition and changes associated with the opportunity development process

Content and Key Learning:

- **STEP 1: Opportunity Mapping**
  - Mapping and internal communicating of business opportunities (of those under development and new ones)
- **STEP 3: Opportunity Exploration**
  - Exploration of the opportunity development process multiple-dimensions using the perspective offered by the 6 complexity principles
  - Identification of required transitions and changes

Organisational Benefits:

- Ability to apply 6 complexity principles in a business opportunities development context
- Strive for feasible solutions by fostering creative, inventive, entrepreneurial actions
- Understanding of multidimensional aspects concerning partnerships
- Feel more comfortable with unpredictability
- Increase entrepreneurial alertness

- Improve problem understanding, transition or change and competence development relating to opportunity development

The RODEO Opportunity Exploration Kit can be directed at:
Management teams of mixed competencies (Business development, Marketing, Sales, R&D) from various organisational levels and expertise areas

Links to the RODEO Process:
The RODEO Opportunity Exploration Kit is an optional tool offered in the third phase of the RODEO Process. Participants are expected to have encountered and made sense of the six complexity principles by means of the Starter Kit and the Context Analysis Kit.

The RODEO Opportunity Exploration Kit – what is involved?
The RODEO Opportunity Exploration Kit is designed as a full one-day workshop, suitable for 6 to 12 participants. Preliminary interviews with managers are recommended to get initial knowledge of the company, the business environment and examples of business opportunities and their development process (2-3 one hour interviews with related managers).

The tool was tested and found useful in creating a shared understanding of recognized opportunities and the multiple challenges surrounding their development.
The emphasis of the RODEO Opportunity Exploration Kit is placed on the exploration of the opportunity development process based on a perspective offered by the six complexity principles. The kit is coherent and streamlined with the complete RODEO Process.

The RODEO Opportunity Exploration Kit is located in the third module of the RODEO Process as an optional tool. In this phase, organisations can choose tools from a range of pre-existing tools as well as those developed by the RODEO team based on specific organisational needs, as identified in the Context Analysis Kit (RODEO second phase).

According to the understanding of robustness within RODEO (grounded in complexity science principles), the RODEO tools are clustered according to robustness enablers. The main enablers identified within RODEO to achieve robustness include a good sense for identity, good forecasting, and high adaptability of strategy, organisation and an enabling environment. In addition to a scanning process of pre-existing tools, from which some where chosen for detailed description and integration into the Tool Guide, the RODEO Opportunity Exploration Kit has been developed in the field of Opportunity Identification and Development

The Thinking behind the RODEO Opportunity Exploration Kit

The RODEO Opportunity Exploration Kit is a one-day workshop in which existing and emerging opportunities are mapped and analyzed from a perspective offered by the 6 complexity principles (self-organisation, diversity, the edge of chaos, history and time, unpredictability, and pattern recognition).

The main objectives of the kit are to help organisational stakeholders to gain a better understanding of each specific, emerging opportunity and to facilitate the required learning and changes associated with the opportunity development process.

A business opportunity may be the chance to meet a market need (or interest or want) through a creative combination of resources to deliver superior value (Ardichvili et al. 2003). Kirzner (1997) defines opportunities as ‘‘imprecisely-defined market need, or un- or under-employed resources or capabilities’’. In practice, ‘‘opportunities’’ describe a range of phenomena that begin unformed and become more concrete as they are developed over time.

Entrepreneurial literature includes several related concepts, which are often confounded with one another — "opportunity development", "opportunity recognition", and "opportunity evaluation" (Krizner 1997, Ardichvili et al. 2003, Baron 2004). These concepts correspond to the principal activities that take place before a business is formed or restructured. While division into these three processes may facilitate explanation and analysis, in practice these three processes often overlap and interact with each other. We will refer to the whole process as the *opportunity development process*.

The *opportunity development process* is cyclical and iterative: an entrepreneur is likely to conduct evaluations several times at different stages of development; evaluation could also lead to recognition of additional opportunities or adjustments to the initial vision. The opportunity development process is seldom either orderly or fully articulated (Ardichvili et al. 2003).

Opportunity development is a multi-dimensional process, with multiple attributes. Some of the factors that influence the opportunity development process include (Ardichvili et al. 2003): entrepreneurial alertness, Information asymmetry and prior knowledge between people, social networks, personality traits (including optimism, self-efficacy, attitude towards risk taking, and creativity) and type of opportunity. Almost no improvements in this process can be made assuming “ceteris paribus” (all other things remaining the same) since many attributes are emergent and interlinked properties that arise from the interacting components that make them up.

Clarity can come from acknowledging the complexity of reality, not from reducing it (Burgi and Roos, 2003). Complexity science thinking strives for feasible solutions, for example, by fostering creative, inventive, entrepreneurial actions, relying on self-organization to allocate resources and manage change and increasing sense-making skills to recognize patterns (Lengnick-Hall et al., 1999).

In line with the above, the RODEO Opportunity Exploration Kit is an organizational analysis tool based on the 6 complexity principles, and sets out to identify and explore multiple aspects of existing and emerging business opportunities through pictorial metaphors and the lens offered by the 6 complexity principles.

Sathe (1989) argues against reliance on the myth of “entrepreneurial personality”. Rather, it may be more useful to view entrepreneurship as a result of interaction between the individual, the organisation and the external environment. An entrepreneurial venture succeeds when individuals perceive an opportunity, believe in it and have the competence and skills to leverage it. Since its development and outcome cannot be anticipated with any certainty, there is a real danger that mandating entrepreneurships, or appointing mangers to become entrepreneurs, will produce the form but not the substance of entrepreneurships. Companies that are interested in promoting entrepreneurship should strive to create the corporate environment in which those who believe in the attractiveness of the opportunity feel encouraged and able to pursue it. In such an environment, a process of self selection takes place, whereby entrepreneurs ‘bubble up” to the surface. Sathe (1989) further points out the importance of an organisational learning process and visible channels to management. The Opportunity Exploration Kit therefore serves as a group analysis tool in such an opportunity development context.

Tool description – an overview

The detailed description is given in the next section. The following outline introduces the main features of the tool

Tool Name: The RODEO Opportunity Exploration Kit

Application Area: Opportunity development
Objectives: The main objectives are to help organisational stakeholders gain a better understanding of each specific, emerging opportunity and to facilitate the required transitions and changes associated with the opportunity development process

Preconditions: The participants (or at least most of them) should have participated in the two initial phases of the RODEO Process – the Starter Kit and the Context Analysis Kit.

The Process of the Opportunity Exploration Kit: The RODEO Opportunity Exploration Kit is designed as a one-day workshop and has five phases (see the detailed description of the kit and process in the next section).
These phases include:

- Phase 1: Introduction
- Phase 2: Opportunity mapping
- Phase 3: Refreshment of the six principles
- Phase 4: Opportunity Exploration
- Phase 5: Closing session

Outcomes / results: The outcomes and results of taking part in the Opportunity Exploration Kit include:

- The ability to apply the 6 complexity principles in a business opportunity development context
- The ability to strive for feasible solutions by fostering creative, inventive, and entrepreneurial actions
- The ability to understand multiple aspects of partnerships

- A greater feeling of comfort with unpredictability
- An increase in entrepreneurial alertness
- Improved problem understanding, transition or change and competence development relating to opportunity development

Requirements / logistics: The tool fits organisations or units of all sizes. Two one-hour preparation interviews with stakeholders are recommended. The optimum location for the workshop to take place is outside the organisation premises to avoid distractions.

Room and material: walls to hang templates, various clip-art, glue etc. Starter Kit – posters of the six complexity principles, and accompanying description material.

Focus group: A management team of mixed competence is required (Business Development, Marketing, Sales, R&D) coming form various organisational levels and expertise backgrounds.

Complexity Science Context: The Kit is based on the perspective of an organisation as a complex adaptive system (CAS). It is also based on the assumption that opportunities are something that are actively sought on a regular basis. Opportunity development is not seen here as a controllable system that can be steered via linear cause-effect relationships. The six complexity principles (self-organisation and emergence, diversity, the edge of chaos, historicity/time, unpredictability, and pattern recognition) are elaborated in relation to the tool in the next section. Stacey (2000), states that organisations exist to “enable joint action” and joint action occurs through people’s relationships with each other. People interact and relate to each other through many different themes. This interaction takes place through conversation of individuals and groups within an organisation. The role of analogies and narratives in organisational communication is discussed in complexity science literature and implemented in the Opportunity Exploration Kit. Several aspects that the Kit relates to, such as discovery, surprise, personality traits in entrepreneurial opportunity literature, are related in similar complexity themes.

The tool in the context of overall RODEO Process

The RODEO Opportunity Exploration Kit is based on a perspective offered by the six complexity principles as a lens to explore organisation or business unit opportunities. The result is increased robustness characterized by RODEO as improved competence development, transition and change (acknowledgement, recognition, acceptance, articulation) and problem understanding. The tool can be implemented as an on going organisational learning tool. Conditions for implementation include participation in the implementation of the initial two phases of the RODEO Process.

A Detailed Description of the Opportunity Exploration Kit and Supporting Material

This section provides a detailed description of the process of the Opportunity Exploration Kit and required supporting material.

The process of the Opportunity Exploration Kit:

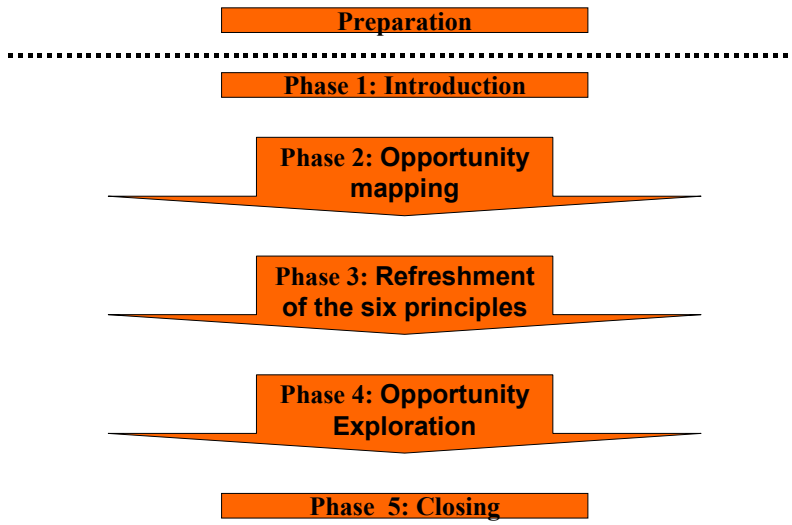


Figure 2: Opportunity Exploration Kit Implementation Process

Inputs from the Complexity Starter Kit

It is assumed that the workshop participants have used the RODEO Calendar, participated in the Starter Kit Exercise Class and Experience Game (1/2 day workshop) and have used the Starter Kit Follow-Up Pop-Up.

They have therefore…

- Encountered and made sense of the six complexity principles in a group context
- Experienced and developed understanding through interactive games and discussions
- Gained a first impression of the notions of robustness, turbulence and … through the pop-up device

Inputs from the Context Analysis Kit

It is assumed that the workshop participants have participated in a the Context Analysis workshop and acquired the following:

- Ability to apply the 6 complexity principles in relation to the company and business environment
- A more comfortable attitude and feeling towards turbulence
- Awareness of the organisation's enablers of robustness
- An understanding and need to use the RODEO Opportunity Exploration Kit.

Required Preparation:

- Conduct a one hour interview with two separate managers to get initial knowledge of the company, its business environment and examples of business opportunities and their development processes
- Review the list of invited participants. Make sure the group is diversified in terms of expertise, roles etc. The number of participants should not exceed ten.
- Create a Grove meeting start-up (OARR) graphic guide to introduce the Context map to the group
- Check the wall space and layout. A U-shaped table or semicircle of chairs surrounding each place to be used to hang the graphical templates. The bigger the wall space the better.
- Bring materials: Opportunity Mapping templates, six principles explanatory posters (from the Starter Kit), Opportunity Exploration Kit template, tape, sticky notes, paper cut-out shapes, markers, flipchart and stand, chalk pastels.

Phase 1: Introduce the process (15 min.)

Goal: To Introduce the workshop goal and general process

- Introduce the process by using a Meeting start-up. (OARR- Outcome, Roles, Rules, Agenda)
- Provide a short reminder of the RODEO Process and why the Opportunity Exploration Kit was chosen as an optional tool for the third phase (Use a RODEO Process poster)

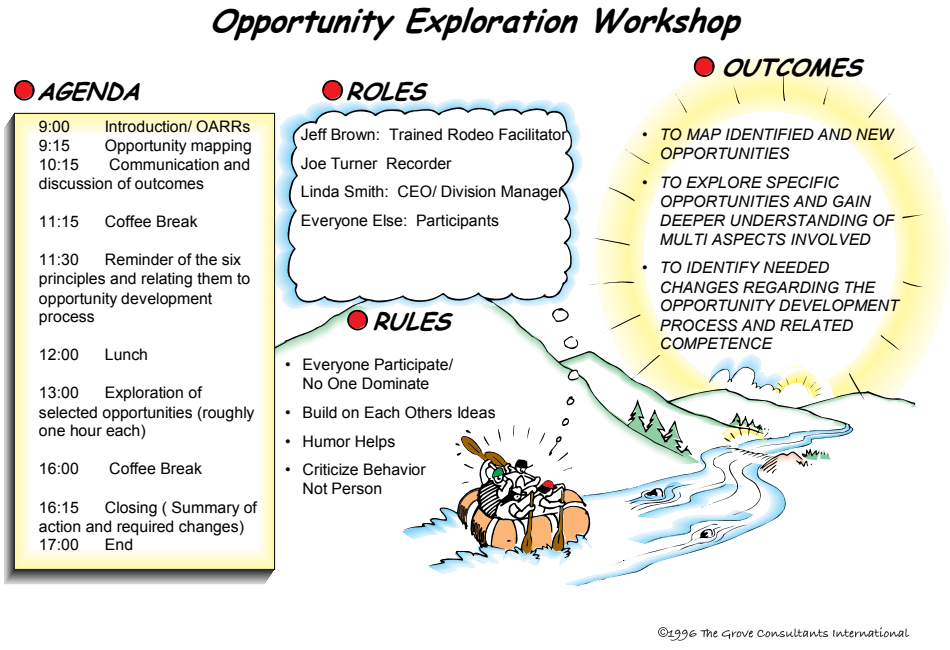


Figure 3: OARRs example for the RODEO Opportunity Exploration Kit

Tip: make sure expectations are clear about the expected outcome; don't spend valuable time describing the kit in a detailed way.

Phase 2: **Opportunity mapping (120 min.)**

Goal: To map and communicate opportunities (new+ under development)

- Present a definition of opportunity, for example, Kirzner (1997), defines an opportunity as an ''imprecisely-defined market need, or un- or under-employed resources or capabilities''.
- Explain to the participants that the goal is to map existing opportunities under development and new ones. Mapping can be done in a creative way (using the offered material) that will have to be later presented to the rest of the group.
- Split the team into two groups, appoint a leader and make sure they are aware of the planed duration of this stage. Supply the group with blank poster-sized paper and all other prepared material.
- *Tip: to enhance thinking the Gary Hamel set of opportunity generating topics can be offered: Dramatic changes in the market that can be used, New ways for profits, New Business Models, What opportunities arise when you talk about competencies and not about products & markets or unfulfilled (or Unexpressed) needs in the market.*

- Gather the groups and have them present the opportunities. Make sure they give a short description of each opportunity (avoid opening a discussion at this point, only clarification questions), ask them to relate to the clustering and graphic metaphors they choose.
- Choose 3-4 opportunities for further exploration in the next phase. The choice could be based on one or more of the parameters: importance in terms of potential impacts as perceived by the team, variety in terms of opportunity type, or opportunity representing different phases of development (the facilitator can decide whether to leave it to the top manger or vote). Use a flip chart to write down the selected opportunities.

Phase 3: Recap the Six Complexity Principles (15 min.)

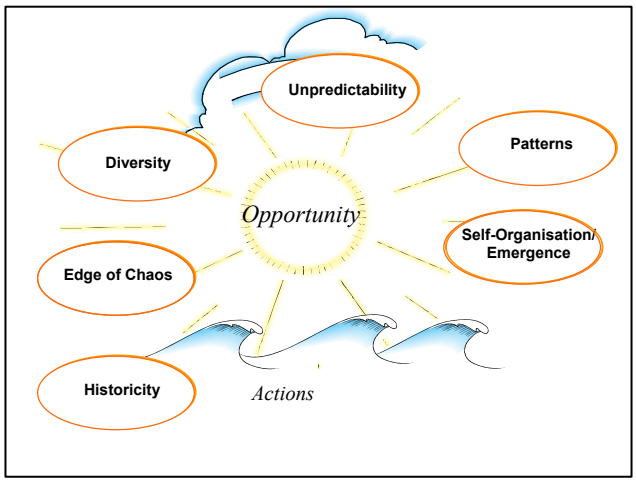
Goal: To rapidly refresh the participants' familiarity with the six complexity principles

- Explain the importance to explore an opportunity development process using a complexity-based approach relating to the external and internal environment characteristics (dynamics, complexity unpredictability, connectivity etc.)
- Go through the six principles and refresh the participant's memory using the Starter Kit posters (remember that participants have already experienced two previous RODEO modules) each phenomenon is

illustrated by an adequate picture and a corresponding sub-title. There is only a minimum of description accompanying the picture, in order to raise question marks and enhance the user's curiosity towards the topic. Use short examples generated in past RODEO workshops.

Phase 4: opportunity exploration (180 min.)

Goal: Explore specific opportunity development processes using the six complexity principles and identify needed required changes



Note: this can be a stand-alone phase to explore specific opportunities without conducting phases 1 and 2. In that case deciding whether to conduct phase 3 should be decided case-by-case depending on previous experience of the participants in using RODEO tools in general and the opportunity exploration in particular.

Dedicate roughly 45-60 minutes to each opportunity that was selected in phase 2 repeating the following process:

- Step 1: Explain the Opportunity Exploration supporting template (figure 5). The template aim is to help articulate and explore a specific opportunity and later discussing needed change actions related to the opportunity development.
- Define the scope of opportunity to be discussed. For example "Going in to Italy" or "developing a new service of combined aluminum and plastic products". Place a sticky note at the centre of the template over "opportunity" with the defined name.
- Step 2: Start a structured discussion. Ask the major stakeholder involved in the opportunity to describe the development. Then invite all to brainstorm the various aspects relating to each of the six principles. Write down as bullet points these aspects under each principle. Use a flip chart to collect themes that could serve as input for the next step (stage 3) where changes and actions related to the development of the opportunity will be discussed. At this point, the facilitator should articulate problems and issues unclear to the participants, ask supporting questions and make sure all principles are discussed.

Note: The order in which the principles will be discussed is not fixed, and should be derived from the free flow of the conversation. However, it is recommended that the conversation surrounding each opportunity would start by describing the history of the opportunity, its current state and planed development.

The following is an outline of optional and supporting questions:

Regarding: Self-organisation/ Emergence

- How was the opportunity identified? Did it emerge from accidental discovery or a systematic search?
- What are the self-organising characteristics? Is it mainly driven top down or bottom up?

Regarding: Diversity

- How can diversity be related to the opportunity development (competence mix, partners, technology, potential client type etc.)?
- What is the importance? What are the associated risks and efforts in supporting the diversity?

Regarding: The Edge of chaos

- Is the business development process structured?
- What is the balance between the intended development and emerging possibilities?
- How wide is management involvement? Management commitment to the opportunity development?
- Do internal or external politics play a strong role? How?

Regarding: History/ time

- Is this the first time this opportunity or related ones are being pursued?
- What where the sequence of actions related to the opportunity development until today?
- Which and to what degree are internal and external stakeholders involved? Are there any related constraints?
- Can some of the related development aspects take a new course in the future?

Regarding: Unpredictability

- Identify the potential sources of unpredictability (i.e. partners, competence, development phases, market, technology, management support, global issues)?
- What is the ability of the company to react to the unforeseen changes? What is the potential impact?
- Could this be used to the organisation's advantage?

Regarding: Pattern recognition

- Can you see big effects coming from small changes in terms of developing opportunities?
- Can you see patterns of activity being repeated over and over again in terms of opportunity development?
- Can you see patterns of success or lack of success?

- Step 3: General discussion on emerging themes and needed actions. Review the collated outputs. Ask what should be changed in the development process? How can relations of internal or external

stakeholders shift? How should competencies be better aligned? Should the mix of competencies change? Are new alliances being developed in a robust way? Have all the related risks and opportunities been addressed? What can be learned from previous experience? What conclusion should be derived for the general opportunity development process in the company/division. Collate the needed actions on the bottom left corner of the Opportunity Exploration Kit template.

Phase 5: Closings session (45 min.)
Goal: Summarize and reflect on findings and derived actions.

The facilitator should give a brief overview of results and major insights. Time should be given for the group to reflect on the outcomes and to discuss conclusions relating to general opportunity development processes in the company. Feedback should be given to the facilitator regarding the Opportunity Exploration Kit and its implications.

The next chapter of this part of the book provides some important recommendations to facilitators of the RODEO Process.

CHAPTER 17

RECOMMENDATIONS FOR FACILITATORS

BY ALEX BADING & LIZA WOHLFART

This chapter reflects on all three modules of the RODEO Process and provides hints, tips and general recommendations potential facilitators. The following outlines considerations necessary prior to beginning the Process. It begins with the need to consider the context of the organisation in question.

Create awareness of the six complexity principles by considering the specific situation of the organisation

A central characteristic of business development is change (continuous or radical) and its implications on strategy formulation, organisation design and human resource management. In the nineties there arose several approaches as to how to manage change within an organisation, each with a particular focus, such as: Organisational Learning, Total Quality Management, Kaizen, Business Process Management, Business Reengineering, Business Engineering, or Corporate Culture Management (Senge, P. (1990); Imai, M., 1991; Womack, P. & Jones, D. & Roos, D. (1992); Hammer, M. & Champy, J. 1993; Kotter, J. & Heskett, J., 1993; Seghezzi, H. & Hansen, J.R., 1993 et al.).

In all of these approaches it is considered more (as in TQM, Kaizen) or less (Business Reengineering) true that employees should be open minded and understand both the problems of the organisation in its current state, as well as the necessary changes. Meanwhile it is beyond dispute, that there is a strong need for the participation of employees in any change management process, as well as a strong need for transparent information and communication to lead a change management project to successful completion (Buckingham, M. & Coffman, C. (1999); De Geus, A. (1997) et al.).

The RODEO Process coheres with the idea of such a participative and transparent approach, but differs in the *thematic context* of the *awareness creation* of participants in such transition and change processes. While traditional change management concepts focus in the awareness creation phase on the problems that have to be solved, and then on the steps and procedures required to achieve this, the RODEO Process instead focuses on achieving a new perception of the organisation based on the 6 complexity principles. Therefore, RODEO Process learning and experimentation is centred in its first step around the six complexity principles (sel-organisation and emergence, diversity, the edge of chaos, historicity/time, unpredictability, and pattern recognition).

Therefore, in most cases, companies aiming for robust business development according to the RODEO Process have to bring down the six complexity principles to the employees' daily work and experiences. The special challenge is that these principles cannot be studied as a new language or a

new engineering approach mainly via rational learning, but have to be experienced and incorporated via intuition and spontaneity (e.g. through the curiosity building process of the calendar and the rich experiences of the exercise class and experience game).

The RODEO team recommends, that the best way to achieve a real and substantial understanding of the special features and implications for practice of the six complexity principles is to take part in the “Starter Kit” module, which is provided by the RODEO Process in step one: awareness creation. But, even though the Starter Kit is considered as a very valuable concept and tool to achieve awareness and understanding of the six complexity principles, the specific point of departure for the organisation and especially the specific learning at the individual employee level have to be considered. There might be organisations, whose employees (and executives!) are not prepared enough (in the sense of having an open mind) to understand the message of the Starter Kit. In some companies it could even be the case that the apparent scientific and technical nature of the words used in the Starter Kit could cause some apprehension and confusion.

Therefore, an organisation that wishes to use the RODEO Process is strongly recommended to bring in a *facilitator* (an internal or an external one), who has either been trained in the use of the RODEO Process, or who has a deep understanding of the features and preconditions of the organisations executives and employees.

If a facilitator doesn’t have the benefit of an open-minded audience, the Starter Kit should be adapted more strongly to the specific situation. For example, this could be done by using typical company-specific cases of turbulence to demonstrate how the feeling of uncertainty applies in the organisation. This can also be achieved by using concrete examples from the day-to-day working experiences of the employees taking part in order to illustrate the six principles.

In addition to the support of a facilitator and the participation of an organisation’s employees in the Starter Kit, *the way the complexity principles and the kit is supported and disseminated* internally is a very crucial point to guarantee the buy-in and up-take of employees. Similar to other innovation-related projects, the integration of the RODEO Process outcomes and results within an organisation requires an *empowered promoter with top-level decision-making competencies and responsibility* and a *technical promoter*, who possesses decision-making competencies and responsibility for all functional/technical concerns relating to the RODEO Process, outcomes and results. The role of the functional promoter can be assumed by the facilitator, if the facilitator is an internal one. Otherwise, if the facilitator is an external consultant, he/she has to cooperate closely with the internal technical promoter on the implementation of the RODEO Process.

The RODEO team recommends strongly, that the *first target group* for participation in the Starter Kit should be recruited from the level of top-management. The main assumption here is that (in addition to the necessity

of budget-allocation competencies and responsibilities), the managers who take part can then act as additional promoters, supporting the official empowered promoter for the RODEO Process, and disseminators of any RODEO Process outcomes and results. If they appreciate the RODEO Process strongly and demonstrate their enthusiasm to middle-management, the achieved acknowledgement is expected to be much higher than if middle-management were to directly participate in the Starter Kit.

Following this group, the next target group to join the Starter Kit should then be middle-management – in order to achieve the same effect as before: The members of middle-management will act as promoters and disseminators of the RODEO Process outcomes and results to lower management. This process of promotion and dissemination should be continued until the RODEO Process outcomes and results are spread throughout all hierarchical levels of the organisation.

Following the *context-specific approach* of the RODEO Process, the above given recommendations concerning the promotion and dissemination of the RODEO Process results and outcomes within an organisation should be considered *general rules*. Therefore, the individual specification of the promotion and dissemination process should be interpreted, and can vary, according to the specific situation of a company (in terms of a company's size, organisational structure and processes, production/service line type, etc.).

Nevertheless, despite careful planning of procedures, workshops and implementation methods, it has to be stated, that the RODEO Process Starter Kit provides great potential for the release of creativity, spontaneity and group dynamics. It is almost expected that new ideas, patterns or even organisational structures will emerge, which might start to be fostered at the beginning of feelings of uncertainty within the organisation. Decision makers who acknowledge the six complexity principles will accept this as a valuable part of the process towards enabling a robust organisation.

To summarise the recommendations for module 1 of the Starter Kit, the main guidelines include the following:

- → Empower a promoter with top-level decision-making responsibilities and competencies, and a technical promoter with decision-making responsibilities and competencies for all functional/technical concerns.

- → Train a trainer and introduce the trainer as a facilitator.

- → Elaborate a company specific promotion and dissemination process for the RODEO Process outcomes and results. Generally, start with top management; continue with middle and lower management to reach all hierarchical and functional levels in the most supportive way.

- → Bring the six complexity principles down to the level of the employees in the organisation; use their "language" (e.g. corresponding to educational

level, production or service staff, etc.) for all parts of the RODEO Process.

→ Let employees experience the six complexity principles in the context of their day-to-day work.

→ Let things emerge, do not be afraid if things develop in an unexpected way - this kind of turbulence is part of the process!

The next section of this chapter provides an explanation and summarises recommendations for facilitators concerning the implementation of module 2 of the RODEO Process: the Context Analysis Kit.

Develop complexity based robustness enablers to manage internal/external turbulence drivers

Following a traditional change management approach, the next phase (after the creation of the awareness of existing problems and several needs of action have been defined) typically is the phase of "vision/goal definition". In this phase (to give a short summary of its main issues) the objectives of the process are developed and prioritized, in terms of their capability to overcome the identified problems and/or to exploit existing potentials for improvement. Building on this system of objectives and derived targets, the required processes and methods of the process are implemented. For the deployment of this change management process and methods, first the impact of the new/adapted goal system on the organizations strategy is analysed – on a regular basis - and respective measures are implemented. Derived from this, the organisation design, and in parallel any required new information technology, is adapted to the new strategy. Building on this new context, human resource management issues are considered in terms of competency development or the development of new career paths.

In a similar fashion as other business development approaches, robust business development in the frame of the RODEO is centred round the following three areas of influence:

- Strategy formulation
- Organisation design
- Human resource management

The specific feature of the RODEO Process, concepts and tools lies in the vision to achieve *robustness* in turbulent environments. Therefore the RODEO Process outcomes and results, in the form of learning in the first line is not focused on the idea to help companies to overcome one (or several) specific problems of their daily work ("fire fighting"), but instead to achieve a robust organisational system, that possesses the capability to organise itself and to adaptable in terms of different day to day changing challenges of the internal and external environment. Naturally, this capability to be adaptable to changing parameters will help companies in the second line to manage their

day to day problems, namely relating to strategic, tactical and operative levels.

To achieve this main feature, the *robustness* of the organisation, the RODEO team recommends that business developers should conduct a second phase (after the creation of awareness of the six principles), which comprises a learning section centred around the application of the six principles to daily business and which introduces the application of the six principles to deal with turbulent environments.

Thus the Rodeo transformation process provides a second phase, which is called the “Context Analysis Kit”. Within this context analysis, the RODEO team recommends conducting collaborative team sessions, within which it should be elaborated how the three main robustness enablers…:

- an adaptable strategy formulation (including good forecasting)
- an adaptable organisation design and
- an enabling human resources management (enhancing the identity of the organisation)

…could be developed in the specific context of the organisation.

Building on this “vision” of the robustness enablers, the degree to which the organisation actually performs in achieving these robustness enablers is assessed. In a similar way as with the first phase of the Rodeo Process, the awareness creation offered by the Starter Kit, this context analysis phase should comprise a collaborative learning process, centred around the six complexity principles. While the six principles have been introduced in the Starter Kit in a more general context, in the context analysis phase they shall be deployed onto the concrete and specific context of the organisation. Therefore, each of the robustness enablers are shaped in group sessions in the new perspective of the six complexity principles, for example: “when we consider the principle of diversity, how should this principle be considered and deployed, to enhance the adaptability of our organisation?”

This learning process of the organisation’s employees is fundamental to make them understand, experience and feel, how the six principles can be made use of to analyse the phenomena and patterns that appear in their daily working situations and how the six principles comprise a new approach for problem solving by means of a holistic view.

When the employees have incorporated the six principles as a new approach, in the next step of the context analysis, the main turbulence drivers of the organisation (internal and external ones) are identified, prioritised and handled according to the six complexity principles. Through the application of the six complexity principles onto the question - ‘How the turbulence drivers should be tackled in the future? - the hierarchical distinction of the three business development domains strategy, organisation and human resources management becomes less important. Instead of that, holistic *bundles of*

*task*s are developed out of the specific perceptions of the six complexity principles, which are parallel to all three robustness enablers.

The application of the six complexity principles to the specific context of an organisation and its members is a very challenging and crucial business development task, which requires a clear workshop concept, with several learning and working group sessions in succession. Therefore the RODEO team recommends that business developers should apply the “Context Analysis Kit”, which was developed and elaborated by the RODEO team, to support the second phase of the RODEO Process.

For the fruitful application of the Context Analysis Kit, the RODEO team again recommends strongly introducing a *facilitator* who is familiar with the RODEO Process and who has a deepened knowledge on the organisation with its hierarchical structures, its leadership style as well as its executives, employees and technological infrastructure. The main precondition to lead the Context Analysis Kit to success is the *preceding participation* of all Context Analysis participants in the *Starter Kit.* Otherwise it will be very difficult to achieve the required ‘open mind’ and the participants’ appreciation of the application of the six complexity principles to daily business.

It is better is the facilitator(s) of the Starter Kit are also the facilitator(s) of the Context Analysis Kit, as the context analysis phase builds on the awareness creation phase and the Context Analysis Kit builds on the Starter Kit as supporting modules. Otherwise, if new facilitators are introduced (e.g. due to limited resources), the facilitators of the Context Analysis Kit should liaise closely with those of the Starter Kit, to build on their experiences and insights out of the group working.

Furthermore, it is a crucial requirement that the *empowered promoter with top level decision-making responsibility* as well as the *technical/functional promoter,* support and promote with ostentation all processes beyond the awareness creation phase, especially related to the Context Analysis Kit.

Concerning the selection of the employees and their integration into the several Context Analysis teams, the RODEO team considers it to be an option to mix people from different departments and staff in the *first step* of the Context Analysis (where the focus lies on the learning and elaboration of complexity-based, visionary robustness enablers). This mixture of people provides a high learning potential between the different departments and staff, but it also requires trust and distinct relationships between the employees. In any case, the RODEO team emphasises the importance of integrating in the second step of the context analysis (the assessment of the actual performance of the robustness enablers in relation to the elaborated visionary robustness enablers) and in the third step (the identification, prioritisation and handling of turbulence drivers by means of the six complexity principles) those people in joint working groups, who have largely common objectives, tasks and control systems and who possess the needed decision-making responsibilities and competencies to define their own strategies and processes within the organisation (and also with network partners).

The application of the Context Analysis Kit emphasises the context-specific approach of the RODEO Process. The robustness enablers are shaped by the workshop participants in terms of the specific situational context and with respect to the internal and external turbulence the organisation is dealing with. Therefore, the RODEO Process provides a generic model of an organisation grounded in the six complexity principles that are transferred to business practice by the Context Analysis Kit workshop participants. In line with this, the RODEO team emphasises that it is very important for the organisation to *balance* the complexity principles according to the situational context and to the requirements of the respective organisation.

For example, in reference to the complexity principles *diversity* and *edge of chaos*, there is no *general* recommendation of the RODEO team to foster the diversity and/or the edge of chaos within an organisation. When considering a specific system with several different agents, who follow several simple rules, it is expected, that there exists a certain number of agents following a certain number of simple rules, which leads to the working of the whole system. But, besides this, there exists the risk that the increasing of the number of different agents (fostering diversity) and/or the increasing of the number of simple rules (fostering diversity) will lead the system to pass over the edge of chaos. Thus, the system will not function any more and will sink in chaos, or maybe even entirely re-invent itself as something completely new.

RODEO introduces *robustness enablers* based on insights gained from the 6 complexity science principles, which are transformed and shaped via collaborative learning, sense-making and communication processes on the six complexity principles.

Time is considered by the RODEO team as being crucial to implement these processes of learning and balancing in a fruitful and motivating way. This means taking a long term appreciation of the Process for benefits to be clearly seen. The RODEO team recommends strongly considering the *dramatic cultural approach* inherent in the RODEO Process, that is widespread all over hierarchical and functional levels and that will require a lot of time and resources. Top-management will appreciate this approach and should be aware of the dramatic impacts it might bring with it, as well as the possibility that disruption of the implementation process at a certain milestone could lead to frustration, de-motivation and negative group dynamics.

To summarise recommendations for implementation of the context analysis, the following guidelines may be helpful:

- → Continue with the promotion and dissemination competencies and activities that have been introduced as a starting point of the awareness creation phase with the Starter Kit.

- → Continue with the “train the trainer” processes and the facilitation of the collaborative workshop sessions.

- → Consider the composition of the context analysis workshop teams: you might integrate people from different departments if you can build on trust and good relationships in the first step (visionary elaboration of robustness enablers). You should bring together people with common objectives and tasks and suitable decision-making responsibilities and competencies for the next steps (assessment of actual performance of robustness enablers, identification, prioritisation and handling of turbulence drivers).

- → Transfer the generic model of your organisation by balancing the six complexity principles according to the situational context and to the requirements of your organisation to handle internal and external turbulence.

- → Do acknowledge the dramatic cultural approach of the RODEO Process and allow extra time and resources for its implementation.

- → Make up your mind clearly if you really would like to foster the strong cultural approach, before you start the RODEO Process. Once it has started, do not disrupt the RODEO Process as there is a big risk of encountering negative effects such as frustration, de-motivation and deconstructive group dynamics.

The next section of this chapter provides recommendations to facilitators for module 3 of the RODEO Process, the Tool Guide.

Support the deployment of robustness enablers through the RODEO Process Tool Guide, and/or traditional methods and tools

A tangible result aimed for within the context analysis phase, is the development of one or several bundles of tasks to handle the key turbulence drivers of the organisation. These bundles of tasks are usually parallel to the three functional areas of strategy formulation, organisational design and human resource management. Some of these tasks are solvable at-issue; some initialize further change processes and/or require further support through the use of (management) tools or methods.

On the management and consulting market there exists a multitude of tools and methods to support business development processes. The RODEO team recommends making use of those tools/methods, which support the complexity principles or which at least do not contravene the RODEO Process. Therefore, the thorough selection of the one (or few) tool(s) /method(s), which completely fit to the company's specific requirements, is a crucial task to continue the business development processes effectively.

To support the tools/methods selection and implementation, the RODEO Process provides a third phase, the "tools/methods selection & implementation" phase. This third phase is called the "Tool Guide" module. The RODEO team recommends that business developers continue with the integration of the RODEO Process into all change management processes. In

so doing, business developers will make use of the third RODEO Process module, the Tool Guide, to support the implementation of the processes and tasks that have been collaboratively developed within the Context Analysis Kit.

As an example, an organisation whose key turbulence driver lies in a strong dependency with one main customer and who would like to decrease this dependency through the exploration of new business opportunities, can make use of the three "filters" provided by the Tool Guide (business situations, functional areas, complexity principles). Accordingly, business developers can search for a *business situation*, which is similar to the one the organisation is struggling with. If a similar one does not exist, business developers can continue the search with the *functional area* filter (in this case it would be the functional area of strategy formulation) and/or with the *complexity principle* filter (in this case, the principles 'diversity' and 'emergence' could lead to success). As a result, business developers would be able to identify the "Opportunity Exploration Kit" as valuable support to decrease the dependency on one main customer.

According to modules one and two of the RODEO Process, the RODEO team recommends strongly continuing with *promotion and dissemination activities* within the organisation to ensure that the *bundle of tasks* developed as a result of the Context Analysis will be followed up and implemented in *business practice*. Without this promotion, there exists the big risk that all RODEO activities will be kept merely on a *conceptual level* that is not implemented in the organisation's daily business processes. This could come up after an interruption of the RODEO Process after the Context Analysis Kit, which would possibly risk the frustration and de-motivation of those employees who are enthusiastic to follow the new process.

The phase of tools/methods selection and implementation needs *facilitation* in the same manner as the two previous phases to ensure the continuation of the process and to strengthen the *six principles approach*. Without this facilitation there is the danger that the six principles approach will become diluted and traditional tools/methods could get increasingly re-established as people have been used to them for years.

According to the context-specific approach of RODEO and what was explained respectively in the two previous phases of the RODEO Process, the RODEO team gives *no normative advice* which tool an organisation should implement, e.g. in respect to its various parameters such as size, corporate life cycle, key turbulence drivers etc. Each organisation should identify the specific need for tools/methods and activities itself, obtaining support from the RODEO Tool Guide Module.

Concerning the *implementation* of the selected tools/methods, it is very important to *harmonise* the new process with the already applied and experienced 'traditional' tools. That applies especially to the two principles '*self-organisation'* and '*emergence'*, which largely contradict traditional approaches of leadership and control systems. To deploy these approaches

smoothly within the management system is a really challenging business development task and requires highly qualified facilitation and top-management promotion.

Overall, the RODEO team emphasises the *iterative character* of the whole RODEO Process. Organisations aim for robustness in times of accelerating change, which leads to highly turbulent internal and external environments. The RODEO Process can be described as a *cycle* that an organisation shall pass through *continuously* in an *iterative manner*. The new lens based on the 6 complexity principles can be made use of as a new *problem solving approach*, which should be continuously spread throughout the organisation, especially in cases where traditional tools/methods fail.

To summarise the RODEO recommendations for the implementation and facilitation of the RODEO Tool Guide, the main guidelines can be summarized as follows:

- → Continue with the promotion and dissemination activities, to ensure the implementation and application of the conceptually developed processes and tasks to daily business practice.

- → Select tools/methods to support the processes and tasks according to the specific business needs of the organisation, the relating functional area (strategy, organisation, or human resources) and/or to one (some) specific complexity principle(s) that shall be enhanced.

- → Apply the Tool Guide Module of the RODEO Process, to support the effective tool/method selection.

- → Continue with the introduction of facilitators, to support the continuation of the RODEO Process and to ensure the increasing incorporation and integration of the six principles approach.

- → Harmonise the new approaches with existing traditional tools/methods, especially the principles of self-organisation and emergence.

- → Acknowledge the iterative character of the RODEO Process and implement it as an iterative cycle.

In addition, in appendix 2 at the back of this book, you will find a questionnaire to give to people using the RODEO Process that will help them monitor their achievements in using the Process. The next part of this book provides case studies of organisations, companies and people who have implemented the RODEO Process. It describes their personal and organisational journeys and the impact of the Process and the 6 complexity principles.

PART 3

Stories of the 6 Principles in Action

This part of the book relates stories concerning the implementation of the RODEO Process within actual, real-life organisations. It shows how people in 8 European companies were able to learn about the 6 complexity principles and make sense with them in their own organisational contexts. The first four case studies are about a group of networked, Swiss SMEs, whose key members participating in the RODEO Process were able to learn together in an inter-organisational context. The next two organisations are Spanish, and show the difference between applying and learning from the 6 complexity principles and the RODEO Process in companies of different sizes, with different size markets. The German case study of an automotive supply manufacturer permits contrast between the Spanish company that is also in the automotive industry. And finally, the last case study shows how the 6 complexity principles and the RODEO Process is enabling the future development of virtual enterprises and innovation in Austria.

CHAPTER 18

Introduction to Stories of the 6 Principles

By Carol Webb

This chapter describes at a high level some of the key impacts felt by RODEO industrial partners after having tried out the RODEO Process. It also, therefore, serves as an introduction to the following chapters, which are a set of case studies outlining RODEO industrial partner experiences in more detail.

Impact of the RODEO Process on the Industrial Partners

The RODEO team set out to explore and create a coherent perception of the modern business organisation, grounded in complexity science. Based on that construct, an integrated approach and accompanying instruments (both methodological and software tools) for business development were to be built, where the key focus was on achieving adaptability and robustness in turbulent environments. How this has been achieved via the RODEO Process, the final outcome of the RODEO project, can be discussed in terms of each organisation. In spite of inherent diversity represented by these cases, several key themes emerge:

a) **'Traditional' Management Issues** (e.g. ability to delegate responsibilities; problem solving);

b) **Interconnectivity** (e.g. fostering relationships ; recognition of patterns between organisations);

c) **Perspective** (ability to see the organisation from a different perspective; ability to articulate organisational dynamics with greater alacrity; recognition of time; recognition of importance of leaving room for chaos and experimentation);

d) **Insight** (identifying new organisational competencies; Ability to recognise how the organisation and jobs change; Ability to recognise opportunities);

e) **Learning** (awareness of being in a learning situation; understanding 'frame' conditions;

f) **Empowerment** (ability to confront turbulence and uncertainty with confidence.

Here are some things to look out for along the way:

Case Study 1: Fostering relationships: growth of trust and confidence within network; recognition of common interests between network parties; emergence of a sense of community between RODEO Process participants; growth of in-company integration between individuals via a common language and shared learning experience; ability to see who thinks 'rationally' or not – something perceived useful for CCSO internally.

Awareness of being in a learning situation: Curiosity stimulated; feeling starting to learn something; networking starts to happen; begin to see the implications of complexity for your life; see the principles in your life and see why your life is like this; start to feel more relaxed in spite of stress and turbulence.
Understanding 'frame' conditions: recognition of importance of having a loose, not strong, frame; importance of creativity recognised; importance of general principles or rules recognised - performance management, but not linked to fixed objectives; importance of consensus in rule changing recognised.
Identifying new organisational competencies: recognition given to emerging meta-competency; recognition of the importance of reserving more time and resources in order to look for more emerging competencies; recognition of different competencies of people within CCSO and its network, and how they complemented and influenced each other.
Ability to recognise how the organisation and jobs change: ability to make more sense of their current organisational situation; enhanced decision-making capabilities – in reference to the here and now, as well as the future.
Problem solving: different sides of problems now seen; ability to create a belief and feeling of confidence in decisions made; seeing and solving problems faster; improved ability to find solutions.
Recognition of time: An emphasis on the importance of the dimension of time has improved performance and competitive advantage; Future relevance has been foreseen from the tools provided that will make an impact on the business development of their company; The complexity topic was raised in the context of the pre-existing challenge of sustainable development for Swiss SMEs in a networked environment.

Case Study 2: Fostering relationships: Recognition of strength of network.
Ability to recognise how the organisation and jobs change: recognition of need to redefine internal functioning of the company; ability to reinvent organisation and roles; ability to use context analysis to understand difficulties in company; ability to recognise and act on patterns; ability to anticipate phases in network.
Identifying new organisational competencies: Ability to use traditional tools in a new way.
Problem solving: ability to make the link from complexity principles to the organisational level; ability to understand the organisation's problems through complexity principles.

Case Study 3: Recognition of patterns between organisations: recognition of similarities with regards to organisational structure and challenges;
Awareness of being in a learning situation: Recognition of role of management at a personal level; recognition of networks as a way to learn individually, to progress and develop and face challenges.
Ability to see the organisation from a different perspective: Ability to use a complexity lens to approach 'reality; ability to use the complexity perspective to develop the organisation; Ability to see parallels between the principles and your own sense of organisational reality as a decision-maker.

Case Study 4: Fostering relationships: recognition of value in of care of personnel and ethical management helping people to stay in employment; holistically understanding the way you perceive the world and different aspects of it in relation to others; recognition of therapeutic value of RODEO Process and in providing coping skills.
Recognition of time: Recognition of the significance of time in relation to organisational experience and history; recognition of future potential impact for managers to go back and be influenced as to how they would then shape the company in their own daily work.

Case Study 5: Ability to see the organisation from a different perspective; **Ability to articulate organisational dynamics with greater alacrity**: ability to articulate and describe the current situation and environment; ability to plan for the short and mid term future.

Case Study 6: Ability to recognise how the organisation and jobs change: recognition of company growth; recognition of changes in strategy and market; recognition of change in management style; recognition of change in activities.
Identifying new organisational competencies: recognition of change in profiles employed.

Case Study 7: Ability to confront turbulence and uncertainty with confidence; Recognition of importance of leaving room for chaos and experimentation; Ability to recognise opportunities (through opening their minds towards them); **Problem solving** (enhanced solution finding abilities); **Ability to delegate responsibilities made easier.**

Case Study 8: Fostering relationships: Fostering self-organisation; serving clients in a better way; getting new customers.
Problem solving: development of a business development strategy; problem solving ability.
Ability to recognise opportunities: making use of threats and challenges; detecting opportunities; developing new products;
Confidence: stronger sense of identity.

Read on in the next chapters to find out more about these case studies.

CHAPTER 19

CASE STUDY 1 – A Swiss SME Support Organisation

By Carol Webb

Case Study 1 is of an organisation supporting SMEs and start-ups in search for competitiveness in Switzerland, grounded in a networked approach. They provide three kinds of services: 1) support of innovation projects, e.g. coaching entrepreneurs and start-ups; 2) optimisation of the development and functioning of SMEs; and 3) support and set up R&D projects. Since beginning their involvement as industrial partners on the RODEO project, this organisation has consolidated its experience in setting up projects in application to networks. The company's role in networks and their organisational frame being linked to strategy in networks has become clearer in the context of RODEO discussions. This was realised especially in the context of 'network evolution' discourse. This in turn has led to the development of a new service and business field – that of R&D.

The way this occurred can be described in terms of the 6 complexity principles. At the beginning, R&D was recognised as a service because it could be acknowledged so through the **historical** and **time**-based dimension, but there was no internal plan in the company to initialise it as a real strategic field of the network. It occurred in a 'seemingly' random way, and appeared to be a creative response to dynamic circumstances resonating with the **edge of chaos** principle where a **diversity** of factors were at play. But the **pattern** was **recognised** that highlighted its significance through **history and time** as a persistently effective and viable way of operating. It is interesting to those who were involved now how this service grew, or **self-organised and emerged**, through various conversations with parties involved in the process within the company. Objectives and the process were very open – not closed – and therefore the end-point was **unpredictable** and the process was characterised by uncertainty. Money was seen as important – but was there and therefore not a primary concern. The meta-competence of setting up projects **emerged** into a new service. Complexity opened the organisation's eyes to the possibility of an open way to do this in contrast to the way they had thought before. It has been considered by those involved as a bottom up approach to **business development**, but with the benefit of a clear frame and money first, with the added support of a network. Therefore, these factors have made the process feel more **robust**. The organisation had loose strategic intent and resources to do 'something' in a certain time frame. They didn't say at organisational level what they wanted to achieve at first. But at the time it was happening, an employee representing the company on the RODEO project admits that "In [*the organisation*] we have felt a kind of movement and a different order of competencies, something new is emerging but we don't know how it will grow yet".

At the academic, theoretical, and critical level the question was raised whether this complexity-based perspective that gave the ability to see this

happen and to describe it already existed in other perspectives or ways of describing things in business; for example in terms of ‘organisational slack’, ‘networks’, and ‘redundancy’ in the context of large organisations. The Swiss industrial partners responded in unison that this latter point was a significant factor – that they are not large organisations, they are all SMEs, and that RODEO really had provided a new lens for them by also bringing the language to describe this process in their own context.

The starting point for this organisation’s interactions with RODEO had been in conjunction with another EU project that had used complexity science as a theoretical resource for creating tools and methods for SMEs. The potential was seen to develop new management approaches further by joining RODEO, too. Other benefits anticipated included making contact with other pioneering people and ways, and finding answers to emerging SME challenges. After discussing the matter internally the organisation also managed the integration of other Swiss SMEs in RODEO.

This also meant that the complexity topic could also be raised in the context of the pre-existing challenge of sustainable development for Swiss SMEs whose practice could be defined as taking place in and between knowledge intensive organisations. The target group of RODEO was therefore a good fit: knowledge intensive and high tech industries. Because, however, the end results of RODEO were unclear at the beginning and intangible to the potential SME partners, it was a matter of trust and confidence in this organisation that they joined the project, as well as, in the end, a pleasure to participate with each other. Networking is the raison d'être of this organisation and this alone denoted enough confidence for the other Swiss SMEs, but individuals from these organisations also saw common interests between themselves, which had been **unpredicted**.

In the context of concrete turning points on RODEO, it was not until a RODEO workshop in Fribourg in February 2003 that the Swiss industrial partners realised what they could do together as a group of discrete partners on the RODEO project. This for them was the point where they decided to work together more closely because they began to see a way forward. This meeting was a key point from which things changed for the Swiss partners, who were experiencing the complexity science aspect of the RODEO project as theoretically abstract and saw the need to bring it down to the practical level to be of use to them. It was the start of a ‘new movement’ inside the project for the Swiss. In parallel with this close working partnership between the Swiss, the extent to which this particular organisation has benefited from and integrated with the RODEO project’s mission, objectives and deliverables can be discussed with regards to the challenges as well as the more concrete intervention points such as the introduction of the RODEO Starter Kit and Context Analysis workshops. For this organisation this has to be seen in the context of their established role in their other EU Symphony project, which highlights the significance of cerebral leadership in the application of abstract theoretical ideas such as those found in complexity science.

This organisation have felt they have had a more important role in the other EU project than in RODEO and saw themselves as the 'thinking father' in the other one because they were the project initiators. When they arrived on the RODEO project it seemed to this organisation that the thinking had been done. The integration of RODEO in their network had therefore not been done with their thinking in mind. This had an impact on way this organisation in turn integrated RODEO in their network. This organisation also felt there was a barrier to enter the RODEO complexity science side, as it seemed far removed from discussions with other people in the company network. Complexity discussions in-company with other employees or network members did not correlate with what organisational representatives were experiencing on RODEO. There was therefore a divergence of views and organisational representatives started to adapt, using other words and concepts in order to bridge the gap. Another big opportunity to bridge the gap came when the RODEO Starter Kit enabled reintegration between people in the company, and helped them to realign their perspectives.

As with another Swiss industrial partner, representatives of this organisation felt this was the first time RODEO had provided something tangible to apply. The run up to the starter kit workshop was important. The organisational representative had explained the context of RODEO to his colleagues who were due to take part. They had been given the RODEO Starter Kit Calendar and they were amazed, he said: "I think there was a big impact inside, especially the managers. They said, 'This is incredible this stuff, what is it?' And I said 'I don't know, let's see'. Everyone was enthusiastic. We had a goal, the calendar, and had to go to Montreux at a certain time, nothing else. Everyone asked, 'But what is the objective, our role, etc???" Key learnings that came from this included the realisation that: "There is a challenge because there are people who are highly rational. Without the starter kit we would have gone back to the rational and would have lost all the emergent outcomes. The impact of RODEO has made a big impact on me and in relation to my colleagues, because I can see after the Starter Kit who is in this kind of philosophy and frame of mind and who isn't".

It was summarised that this learning would be useful for the organisation internally, and that external facilitation of the Starter Kit would be valuable in-company. This experience also brought about acknowledgement of synergy existing between the two projects, RODEO and the other EU project. According to this organisation what has been produced on both projects when integrated into a unified offering is very complimentary for the SMEs. Another Swiss industrial partner, for example, has had the benefit of both: from RODEO the Starter Kit to understand complexity principles, the Context Analysis workshop, as well as story-telling, integrating a complexity-based community of practice, and from the other EU project the network design of the organisation, and the competencies approach were both used. The company of case study 1 therefore emphasised the value of the integration of the two projects from this perspective.

CHAPTER 20

CASE STUDY 2 – A Network of Swiss Psychologists

By Carol Webb

Case Study 2 is of a company that has undergone transitions and a significant reinvention in the lifetime of the RODEO project. The organisation in its current form (at the time of writing in November 2004) was formed as a Swiss network of 4 independent psychologists at the beginning of 2004. The network offers services in psychology and counselling. The network members have defined their new 'organisation' as a space where 4 persons have their own business, and in addition share common space, infrastructure and administration, as a loose structure 'somewhere between a formal organisation and an informal network'. The network was created to continue exploiting the competencies and high level services which were previously offered by the company it was formerly known as. This transition has been defined by a network leader in retrospect as necessary in order to execute robust business development in their own period of organisational turbulence. This turbulence was characterised by the internal **diversity** of professional direction, **edge of chaos** situations pertaining to realising a state of transition and new creative options being opened, **pattern recognition** of significant indicators such as diversity in professional directions and sense-making and post-rationalisation from a perspective enhanced by **history and time**, eventually culminating with **self-organisation and emergence** into a new 'open system' networked organisation.

The RODEO project created space for discussion on ways forward in respect to the above and accelerated the process and the idea of creating a **robust** network came out of interactions with RODEO. Creating a network has served as a support to give space to each psychologist in their separate domains and specialist area. It was considered impossible to manage such high level services in four different dimensions, but the network idea has since proved effective and this aspect of **business development** has been considered successful so far. Contact between the organisation referred to in Case Study 1 and this organisation in its prior form had initially occurred prior to the RODEO project, however, when two parties from each met following email interaction and informal conversations took place on the subject of how the two companies could work together. It was discovered that common ground existed between the two in working interests in the complexity and chaos domains. Following this came the opportunity for the organisation referred to in Case Study 1 to invite this organisation in its prior form to join the RODEO project, which gave their mutual interest in complexity-orientated' nurturing space. This step was seen as positive for this organisation in its prior form because they wanted to increase their own network within Switzerland and beyond.

A key learning point arising from this organisation's interactions in both its forms with the RODEO project was the need to have an external consultant to

give feedback on the functions in the organisation in an objective/observer way to better facilitate subjective sense-making, and also like the organisation referred to in Case Study 1, the realisation came that resources such as time and money were needed to do this. They also realised that the approach of this had to be in sympathy with the content on which they based their own services: the complexity based approach which they use to practice their own psychology and counselling.

Challenges related by this organisation in reference to their integration with RODEO as the organisation in its prior form was reported as difficult at the beginning, and can also be seen in the context of similar challenges encountered by the organisation referred to in Case Study 1. This was explained as being due to the familiarity with a different kind of application of complexity in the context of the psychological domain. Representative of this organisation in its prior form related struggling therefore to make the link of the theoretical material to the organisational level. Instead then, the organisation positioned themselves as industrial partners with problems. Then they were able to make the link, they said. As with the other Swiss industrial partners, however, the biggest turning point in the RODEO project came with the implementation of the Starter Kit. A representative from this organisation, reports: “For me, a concrete intervention point came when I was the facilitator of the Starter Kit – this was the point of making it channel together for me. It confirmed my first thoughts on the application of complexity in teams which had been difficult to explain to other partners. It confirmed my assumptions about using complexity in organisations, i.e. that the value is in using it in daily business as a psychologist. The human being is complex and you have to deal with this. And the organisation is like a big human being for me. That is why complexity debates are good to recognise something in organisations.”

At this stage the role of the representative changed again, from industrial partner to facilitator, which permitted her to make the link between her competencies and role, as well as between research and organisational applications of complexity implied by and suggested in RODEO. She added further: “From this point on, I really recognised the impact on my own business, the organisation and so on. The principles framed my thinking in the construction of the new network. I mean **historicity, diversity, and the edge of chaos**. People in the organisation are sometimes fed up with “new projects”, sometimes **historicity** is highly significant and you have to deal with **time** and space and define new structures. And it is a problem of organisational design and maybe we will have to discuss this further. This has all given me sense of my own business network, the confidence that my business network is not just here because I am here, but also **robust** enough to survive without me for a few months. I personally have to have the feeling that there is something robust if I leave the system for a few months. That is not only linked to my person, but also to a certain philosophy, and to that of others.”

CHAPTER 21

CASE STUDY 3 – A Swiss Technology-Based Service Provider

By Carol Webb

Case Study 3 is a Swiss technology-based, university spin-off company that started in 1998 providing products and engineering services to the micro-fluidics industry, dedicated to the biotech industry. As a small and growing company they have had extensive contact with the organisation referred to in Case Study 1 to help define the structure of their company and in the integration of new employees and customers, and integrating new market needs.

Like the organisation referred to in Case Study 2, this organisation joined RODEO upon being introduced by the organisation referred to in Case Study 1. Their spirit was one of open-minded exploration in conjunction with their own company challenges. However, following initial interactions the aims of RODEO did not seem in-line with theirs. But this feeling of uncertainty was alleviated when company representatives realised that there were similarities between the organisational experience of industrial partners on the project from diverse sectors with regards to organisational structure and challenges. This led the company to continue with the view that they were confronting their own experience and that of others to see how things happen in 'real life'. They report having previously felt as a small company that they had to 'invent everything to sustain growth', which they now see is not the case.

The impact of RODEO happened very late in the project for this company they report - only in March and April this year (2004) when they did the Starter Kit and Context Analysis workshop. They received the RODEO Calendar 6 days in advance of the workshop. A company representative said: "I was really surprised. It was the real first output from the project and it gave a very different view from what we had in our group. It came really as a product we could see and understand. **We saw that the principles on the calendar really do resonate with real life**. We saw it in advance, but then had chance to see the relevance of each of the points on the calendar at the individual and organisational level. For the first time **I realised that what I see as complex sometimes can be described** – you can put a name or a label on it. Not that you can control it then but that you can at least recognise it. That was the impact of the Starter Kit; it brings recognition of these things. But it doesn't come out of the blue. It is a process. For the Context Analysis workshop I am not sure I felt the same. It was 'very' applied and somewhat close to existing tools, 'What do you do when you have a problem? - Draw a matrix and make some goals, etc."

The company reported that key learning points and impacts have been in recognising these 6 complexity principles and key phases of their work and seeing relationships between that and what they had also come to think of as their own business patterns. This had come out of group sense-making

discussions and thinking developed with the other Swiss industrial partners. In defining some relevant business patterns to themselves and the other Swiss, this company realised that organisations can demonstrate somehow having similar yet different patterns. The 6 principles were close to what the Swiss had defined as different types of patterns for them. They learned that they were not at a single point in time that bore no correspondence with other organisations' patterns, but that different organisations can be demonstrating different patterns which are also similar and overlap in different ways when working together. Management then becomes an issue, they said. This learning has had a small impact within the company, and this has manifest itself in management perceiving themselves as more open minded now, who don't feel themselves saying so much that 'We have to go there and do that' now. They consider themselves somewhat different in that they understand different patterns and different needs/modes at the time of implementation. They say their management style has changed because it is more complex than just having one or two types of management based on who is making decisions. However, the managing director says time is still needed to make sense of this further as this learning is still new for him and therefore the company. Time is considered essential in order to continue to interpret this learning and develop its meaning further in the context of the organisation.

The organisation referred to in Case Study 1 responded to this organisation's need in this regard and emphasised that although there are a lot of approaches and tools for the 'rational' part of such a process, there are still very few for other side, e.g. Starter Kit type tools. The organisation referred to in Case Study 1 identify a big gap there and suggest this also corresponds with their key learning point that after doing the Starter Kit and the Context Analysis workshop the role of the facilitator becomes significant. They suggest this is pertinent not only for workshop facilitation, but also in being able to see the manager as an external facilitator in order to set up new processes. In line with this view it was considered important that key people in decision-making roles and positions of responsibility in management have to set up such processes and be involved in them. Implementation of the processes is considered the next challenge.

Individual learning points for representatives of this Case Study 3 Company included the recognition of when self-organisation was not only significant but also necessary to somehow initiate in the absence of clear leadership or direction. The feelings of uncertainty this caused seems to indicate that the need to structure time and activities becomes paramount when some kind of turbulence is experienced. On a personal level this learning process has in turn made management feel less stressful in such circumstances, and conversely, 'more cool and relaxed'. "I care about it," said the managing director, "and I know I can bring positive things to the situation, but then it doesn't matter too much in the sense that I see myself in a bigger picture."

Management also related that it was possible to see all 6 complexity principles at play in their network relationship with the other Swiss industrial partners. It was felt that these help articulate the experience of the Swiss partners in interaction with each other.

In regards to the company's present outlook, and in terms of prospective sense-making, persisting challenges were set in the context of responding to client needs. The company's basic challenge at the beginning of their involvement with RODEO was to collect information from outside the company and distribute it inside to develop better products for their customers. And then, they said, they wanted to take the know-how from inside and to interface this with business needs elsewhere. Their challenge is to communicate that information. For example, they have customers with different needs, some with needs better defined than others, and potential customers that could become customers - some with specific needs. An interpretation of strategy was therefore needed. On reflection this company now appreciates that the RODEO project has improved the way they look at 'reality' from the inside and the outside to initiate organisational progress and **business development in a robust way**. The communication issue though is still a persisting challenge for them, however, despite having this better view of what to communicate, and when, and what to integrate. Management's own response to this was philosophical in that they doubted whether this challenge would ever be solved completely.

The role of the Swiss network and partners are not linked to this company as an organisation said the representative, but more to management on a personal level, who see the network as a way to learn themselves, to progress and develop and face challenges, in their organisation. The company representative said: "I have seen that using a complexity lens to approach 'reality' is a very promising tool. The complexity perspective has been constructive in developing my company by taking the whole theory and extracting the 6 principles. Six has been a good number! Twenty would have been too many. And this perspective has made me see parallels between the principles and my own sense of organisational reality, because I am a key decision maker with my partners in the company."

In this way the role of individual seems important then and while decision makers have an impact at this level, others may not. This can also be seen in Case Study 1 and the way RODEO representatives said they operate with different levels of impact within that company. For the Case Study 2 company it is now difficult to imagine how things would be without the advantage of complexity knowledge, say management. It was suggested that a time frame of five to ten years may be needed to see if involvement on the RODEO project will have been of vital importance to the company.

CHAPTER 22

CASE STUDY 4 – Making Sense of the Swiss Cases Together

By Carol Webb

Representatives from all three Swiss partners present indicated that the 6 principles articulated the experience of their own interactions with each other. The Case Study 1 organisation reported **self organisation and emergence** having been most easily recognisable, especially in reference to their experience with the wider RODEO consortium, where it seemed to them that no one decided and planned ahead – instead things were perceived to have always been on the **edge of chaos** and **emerged**. For the Case Study 1 organisation this was seen as a positive experience in that it was a safe environment for such a complexity-based project to develop without the normal stresses associated with such an approach. The Case Study 1 organisation felt that **diversity** was represented on the RODEO project in terms of the types of industrial partners on the project and equally so in the Swiss partner network - e.g. the insurance sector, psychology, high tech services, etc. – in addition to the almost paradoxical yet complimentary relationships between the Swiss as practitioners and facilitators. The Case Study 2 network representative suggested **pattern recognition** had been significant too. They reported having built this into their own frame among the Swiss in the context of their joint work on understanding their business patterns. This was also reported as of significance in terms of the patterns recognised in their own individual organisations and between themselves in their own networking interactions. In reference to this the Case Study 1 organisation representative said that it was now much more than just the interaction because they now felt something was really **emerging**. And the Case Study 2 network representative connected this with **unpredictability**, in that it is still unknowable in advance as to what this is, but that they are working with the feeling that something is there and trying to develop it further.

In regards to their collective present outlook, and sense-making prospectively, the Swiss partners identified some persisting challenges. The Case Study 2 network representative saw this in terms of having to continually define with each other what it is they were doing and where this was leading. The Case Study 1 organisation representative suggested that being at the end of the RODEO project timeframe was giving the Swiss partners a collective push to contemplate how to continue interacting with each other and under the context of what ‘frame’. This frame had previously been inherited by the RODEO project to some degree and the Case Study 1 organisation admitted that it would be impossible to define a new frame without all four Swiss partners sitting round a table together. The physical presence of the Swiss partners with each other in their own meetings had been defined as a constructive experience until now. Under the context of RODEO they reported having learned a lot but are now faced with the challenge of how to continue. In response to this challenge they are now discussing the idea of creating a post RODEO Swiss association to promote the complexity approach through

networking in order to develop organisational and individual competencies facilitated by the development of internal frames of **organisational learning**. The Swiss now report having a balance of competencies in their newly proposed network represented by potential membership of diverse industries, and are now at the stage of looking at their roles in the association, which need to be defined before proceeding. The Swiss consider, however, that the long term is an issue because they want to aim towards supporting a **self-organising** approach among the proposed network, in a way that means they can 'walk how they talk', and 'live what they by default promote'. It is still not clear how this will be implemented or developed and this remains a key challenge.

The 'role' of the 6 principles in the context of these future plans applies at different levels. The Case Study 1 organisation representative identified one of these as being the conceptual level. In this context the question was raised whether the 6 principles were 'the right 6?' suggesting that others may be relevant too. It was felt that others could also be linked to the 6 principles and other methods and approaches. E.g. a stronger link could be made to the other EU project and their application of complexity-based ideas. This was seen as a possible next step. The other level appreciated by the Case Study 1 organisation representative was the context of using the 6 principles in daily problem-solving activities. The Case Study 1 representative said they used them now as an approach when they have a challenge and the solution cannot be seen – the principles provide another perspective from which to see the problem or the challenge. Useful questions asked in this situation are, 'What is the **history**, the **patterns**, the **diversity** around this?' Therefore there is perceived value in using the principles to see in a different way when other methods and approaches fail.

This suggests that integrating such a process into other methods and approaches may be useful. Because of this, and in specific reference to the Swiss partners' future plan of creating a post RODEO Swiss Association which is based on an understanding of the principles, then the Case Study 1 organisation representative emphasised that in order to share such a perspective in the evolution of their proposed association there would be a need to strongly promote the experience of the Starter Kit in the same manner as the Swiss had encountered it. Otherwise, the risk was stated that all the network may have would be an intellectual discussion that wouldn't bring anything new or of added value. A Case Study 1 company representative said, "You would lose the core essence and value of the 6 principles - so we have said that in future, if you don't take part in the Starter Kit then you can't join the association."

Other criteria suggested for the envisaged association would include: membership based on personal relationships and introductions by word of mouth and personal contacts; membership based on whether the person is interested, open minded and curious, and not because they can 'get' something from the network; would-be members first have to give. Therefore, the Swiss association in question is taking shape as a shared vision which would be promoted through networks to promote the development of

individual and organisational competencies by **inter-organisational learning**. Next steps are to develop this frame and implement it first with French-speaking Swiss, integrate community membership through physical interaction then via a virtual interface with a web platform. Other community of practice tools are also seen to be appropriate. The community of practice would remain strongly linked to the 6 principles but the context for this would be grounded in practice. Other members with experience in this would be sought out who are perhaps based in other countries. Interfacing on these topics in 'your own language' is valued, as is at the same time the need to link into an international networked environment. Other challenges seen include the need to bring in a wider range of competencies and to link with other communities of practice doing similar things in other countries. The Swiss have currently defined three target groups for their endeavour: first, managers, as key decision makers in their own organisations but who also have lots of personal interest and enthusiasm in the area; second, consultants and facilitators; and third, researchers.

Summary and Conclusions

Of the three main stories told - organisationally individual stories, a collective story of a series of events, and a story of future plans in progress - certain themes become apparent. Firstly, complexity science, studies, theory or ideas has been encountered as difficult, challenging and abstract by practitioners. In the case of the Swiss RODEO industrial partners they responded to this by focussing on their own organisational challenges, problems and business patterns, and undertook this in the context of **inter-organisational learning**. During these interactions they came to value each other in the practice of providing an external viewpoint. This more objective point of contact with the subjective sense-making mode in the form of inter-organisational learning conversations enabled novelty, spontaneity and creativity to emerge. Trust and confidence that was already present at the start of their interactions with each other grew to the extent where communication and mutual understanding allowed other things to happen. During this time each organisation represented continued to face its own challenges, changes and transitions.

Parallel to these changes, key learning and intervention points with RODEO products allowed the Swiss partners to make sense of their own turbulent experiences and to proceed by themselves to develop their businesses by means of their own personal agency in a robust way. The added value of this process which benefited from knowledge and understanding of 6 complexity principles as applied to themselves, their organisations and network interactions, has now provided the foundations for their own interconnected futures where learning in the complexity domain is recognised as key to robust network development. In addition, while the RODEO project has been a catalyst for this to occur, the Swiss partner involvement with the other EC project cannot be ignored. The synergy between these projects and the inter-organisational learning which has gone on around their development has contributed substantially to the climate and conditions needed for such activities as described above to be realised as important. Also of significance

is something the Swiss referred to as other parts of the ‘frame’, including having enough resources and time to allow such **emergence** to be viable. That ‘organisational slack’ is provided and recommended is not a new learning for academics and business people. Neither is the idea that networks can provide this for SMEs in lieu of such slack afforded in larger organisations. However, that such organisational slack can be redefined and seen as valuable in the context of the learning organisation in the context of a networked environment that wishes to benefit from the sense-making advantages provided by complexity principles is confirmation for those with intuitive feelings on the matter.

Conversely, if an organisation that perceives itself in an isolated context, without actively acknowledging the importance and value of a larger business ecosystem, also doesn’t acknowledge the value of organisational slack in the form of resources and time or the benefits of sense-making in turbulent and uncertain environments using complexity principles, then it is a reasonable assumption to make that changes and transitions such as those encountered by the three Swiss companies profiled above would be perceived with a more undesirable and stress inducing perspective. This does not mean that the Swiss did not encounter their own transitions and changes over the past two years in a stressful way, but that with the benefit of hindsight and retrospective sense-making they appreciate their stresses as more a part of a process that they have an active role in and in one that is far from over yet. Their confidence in their own future based on networked interactions with each other as well as others, both local and global, as well as grounded in complexity principles makes absolute sense to them.

This validates the assumptions of the RODEO project that complexity theory, science, ideas or studies does have value for networked SMEs encountering uncertainty in turbulent business environments characterised by high degrees of changes and transitions, and that an approach to business development based on complexity principles is one that makes participants in this process feel that the process is robust.

CHAPTER 23

CASE STUDY 5 – A Spanish Product Consulting Company

By Carol Webb

Case Study 5 is about a Spanish company that began as an individual design studio enterprise of one person, who, in the 1980s and 1990s had begun to see an opportunity to bring engineering and design together in the form of a distinct service offering. After 8 years of developing his business he recognised the opportunity to focus services on the *future* needs of clients, from which the innovation department of the company as it is known in the present day then emerged. It then became necessary to integrate a logistics department to provide supplies, and each of these areas offered their own services. Then an opportunity arose in Paris, France, to buy a cost optimisation company, from which it became possible to integrate all these services.

In the meantime, the war in Iraq came along and things started to become turbulent for this company: people were not buying services; the French branch became less independent; the Barcelona branch of the company had to work to support the Paris branch. In order to devise a clear path for the French branch, the need to re-structure their service offering was identified. Because the service range was unique it was suggested that it was necessary to manage it differently, as a partner of the organisation. Following this move, some stocks were sold. In addition there is now a new CEO structuring the company. Since 2003 the company have been paying off debts incurred over the previous recent years, the French branch has gone, and benefits are now being seen.

As a result of recent 'lessons learned', a new way of doing things has been integrated in Spain. Now the new CEO has put more emphasis on consultancy and the organisation is no longer just a product company, they are instead a consulting service offering strategy through products. A new service based on sustainability has also been developed, which acts as a satellite of the innovation department. However, this is still in the early stages of development and has not been explored properly by the company yet, and it is also felt that the market is not right for it yet. However, the company is growing in these areas. The innovation department was started with 2 employees and now there are 10 or 12. This department is now a core service the company depends on internally because of external demand from clients. Says the company representative on the RODEO project, "Design alone is nothing now, innovation is what sells."

Key network interactions for this company are driven by internal connections and support. The representative describes this in reference to her own department, innovation: "Internally, because we are a stand alone department, we are like a mini system in the system, we offer a modular service. For example, in 2 projects I can have innovation and design – the

intention of participation is very modular. Even if independent units are not strong by themselves, the internal network is the value of the company." External network interactions are mainly associated with logistics, and some dependency exists on having a good database of suppliers for clients for example. But personal networks were also identified as important: "People who know other people in other companies - through these we sell projects", says the representative. Formal network ties based on organised business groups are not well-established, however. The company reports being strong in knowledge network partnerships, such as those with a UK University.

Learning points, concrete changes and turning points for the company have recently included the recognition by management that re-structuring was necessary. Before, it is reported that the company had been placing too much emphasis on their role as 'navigator', and due to the increases in staff numbers 'making order out of chaos' suddenly became paramount. The structure now being introduced, however, is bringing about the feeling that there may now be too much, staff report. Explains the representative: "One of the main drivers of the company is creativity and this depends on edge of chaos. Too much structure doesn't allow creativity. Management also seem to be starting to understand this slowly. When we began the RODEO project, we were 30, and we almost doubled in employee numbers in the first year. Company strategy also changed in the meantime. At first, there was a focus on SMEs. Now we are much more focused on large companies who can pay our value and who are used to such a type of service. Company management has changed as mentioned before. Skills and competencies have changed as well though – previously we were mainly designers and engineers, but now there is a balance with business administrators with marketing experience. The type of projects we engage in has also changed, now we integrate interface projects, and emerging at this moment are some pure consulting projects that allow us to offer more product orientated services."

<u>The integration and impact of RODEO</u>

Challenges encountered in the integration of the RODEO process with this company are told from the perspective of an innovation consultant, a project manager within the company's innovation department who has been working on the RODEO project. The company experienced a few things from the RODEO process, including the Starter Kit and the CompetencyDaq tool. The representative reported some of her own observations: "Sharing knowledge about what I am learning here has been a challenge. Even if I had some actions to do this, because of my workload I couldn't do it with my organisation. It has also been a challenge to introduce the RODEO concepts and ideas within my company because of all the other changes going on, and because it would be necessary with some things to change people's habits in order to really implement a tool. For example, it has been very difficult to make people use CompetencyDaq. Therefore, employees have not really participated. Firstly this has been because we are a small group of people; and secondly because the tool has not been fully developed yet – it is still only a prototype version we are using. The size of the use group was the most important thing though."

The lack of definition from the start of the RODEO project regarding what the end outcomes would be was also a source of frustration for the company. The representative explained: “There was no way of understanding or to smell where RODEO was going to finish. You couldn’t even understand what was going on or what to take out of it at the start. It has used lots of language that I find difficult to use myself – a very high level language that is difficult to see how it would impact on business development in a real way. So, you have to see the individual application and how you perceive it yourself. This aspect really interested us and we wondered what we at this company could take out of it. There were also personal challenges as well. As a group I was sceptical about how we could work together to achieve some common goals when we were all so diverse from very different technical and geographical backgrounds. It is hard to work as a group because of different interests and interpretations of individuals. And there is still the challenge about how to measure the impact of RODEO.”

Key learning points and impacts derived from the Starter Kit came in terms of the realisation of the limits of application in a small use group size. Participants also felt that it would only bring something tangible to be felt organisationally if the Starter Kit was introduced to all the people in the organisation. Otherwise, as it has been observed in the innovation department at this company, the impact is only felt at the individual level. At the level of the individual, the company report that the Starter Kit has changed individuals in small ways. “You can speak with them now and a common language has been built”, says the representative, “Also, something so tangible as well as so abstract generated lots of surprise and they liked it - everyone wanted a calendar – and then we also had a small political problem internally because they also wanted to use some of the better ideas in their own work on another EU project.” But, the level of impact was perhaps of a different nature from that which had been foreseen. The representative explains: “It was such a little impact that it is not appreciable. We did it with a purpose that was not inside the RODEO process. We did it for people to understand what the project was about and what we were building. No organisational benefits were therefore perceived. To share it, it is so difficult that you have to do the Starter Kit with everyone. In order to really allow an organisational learning process to take place many more people would have to take part. Significantly, no one from management level took part, therefore decision makers were absent from this part of the process and unable to see the benefits in order to assess its potential impact for different organisational levels. And at the end the question was, ‘ok, now how are we going to use it?’!”

Concrete changes and turning points felt within the company as a result of being involved with the RODEO project has been more in reference to the image of participation in EU projects in the organisation having changed. For the representative at a personal level this led to her own personal development and advancement within the company that culminated in her promotion to a more senior position. At the organisational level the RODEO project has disseminated ‘lots of creative inspiration’ to the company, as the representative describes: “Lots of information on trends and business – the company has benefited from learning about strategy etc., and this has been a

different learning point for us – we have extracted different learning and used it to apply with clients." It is also reported that those who participated in the Starter Kit and CompetencyDaq now feel connected based on a shared learning experience, and some trust and feelings of confidence have emerged between these parties. In addition, it is reported that RODEO has provided some good and re-usable ideas for the dissemination of knowledge, e.g. using a calendar to help clients learn.

The company employees in the innovation department are also able to now articulate current changes, transitions and challenges by means of the 6 principles, as the representative describes: "Now they are contracting lots of people with the same profile, we are losing **diversity** and this is reflecting on projects, which seem to not be so creative as a result of the loss of diversity. The additional pressure of too much structure is starting to give the impression that it may lead to too much stability and reduced creative environment which the innovation department seems to thrive on – the **edge of chaos**. The other way to understand this is that people have arrived with their 'creative ideas' about how to work etc, but then they adapt to our ways and system. There is a need that people understand there is a certain amount of **unpredictability** about project outputs – being creative means things are **emerging and self-organising** in an **unpredictable** way along the duration of the project. Also, we have a communication problem because of a lack of common languages between departments, which is needed. So at the moment there is stress and confusion between departments. We have identified this as a significant **pattern** that has been **recognised** as repeating over **time** – therefore the **historical** dimension has allowed this to emerge as significant. We want to do something about it. **Diversity** is good in this instance, but you need something common to allow you to communicate. Because of the amount of **unpredictability** that we need to work well, lots of **self-organisation** is required and does go on. You know you have a lot to do, but you also have to be able to spontaneously change, adapt and re-organise, which seems to happen by **self-organisation** at the **edge of chaos**. Then you think about what **self-organised** then you re-phrase the plan. The plan is the starting point but it cannot be the end point. It is difficult to communicate this to people from organised and structured environments of work, and there is a certain amount of frustration in talking to clients about this. Communication of this creative process is difficult. In order to understand it you really have to experience it. Clear points need to be communicated, so sometimes less is more!"

<u>The present outlook, prospective sense-making</u>

Current changes and transitions the company is encountering are various. They report currently bringing in 'new profiles' which has generated confrontations and disequilibrium between people and departments. Persisting challenges include that the company still aims to deliver novel services, which is their USP, which tangibly refers to including novelty in the knowledge areas that can deliver added value in their services. The company also still wants to expand to other countries and report currently trying to enter the Italian market. The company wants to have a more standard

organisational set of processes that allows knowledge sharing, productivity and innovation, which means knowledge sharing to extend processes, effectiveness and production, using the minimum resources – human and others.

The future role of the 6 principles, visions, intentions and ideas for a way ahead based on the 6 principles has been described as a number of potential options open for the company:

1. Using the 6 principles as a dissemination tool. The representative explains: “We have a problem of interchanging ideas internally, as said before – this is about communication. We all speak different ‘languages’ from different specialist backgrounds. We have been fighting with this problem. The starter kit was built on the premise that it enables people to speak the same language. So it makes sense to use this approach to obtain and develop a common language in the company. When we say trends, actors, and context reviews, attributes, concepts, we need to know what we are talking about. So, in order to get the same results that the Starter Kit has had in RODEO we need to build a common language through creating awareness and giving a common shared experience to develop this.”
2. Company employees who were introduced to the Starter Kit now include the new language and ideas in their normal speech and the opportunity is there to build on this somehow. “Now, when I speak about certain things I use this language, and other people have also started to use it, like turbulence, the principles etc. for example, the edge of chaos and self-organisation. They talk about the emergence of things, and they say things like, ‘let these things emerge’” said the representative.
3. There is a general feeling among management and other employees that more could be done to exploit some very usable ideas developed on the RODEO project, such as calendars and posters. It is reported that these ideas will be developed and adapted for use elsewhere.
4. An email knowledge-sharing bulletin called ‘Food for thought’ was initiated in the company in order to share knowledge learned from the RODEO project as well as other sources. The company think this is interesting and it has helped to develop understanding and communications between employees.

CHAPTER 24

CASE STUDY 6 – A Spanish Automotive Interior Design & Manufacturing Company

By Carol Webb

Case Study 6 is a Spanish automotive interior manufacturing and design company that has been known in its present form for 15 years. However, the company story started in the mid 1950s when two brothers got together to sell car parts in Spain. Since those early days they encountered increasing success and the company continued to grow. First, they bought some small supplier companies in Spain, and then some bigger companies located outside. Finally, this developed into the company as it is known today, with more than 7000 people working on four different continents. Within the larger commercial entity, there is also the engineering hub for the whole company. This is the place where all R&D activities take place. But more specifically, within this hub is the research dept, with approximately 70 full time staff working in 7 unique areas, each led by a different manager. The company's industrial partner representative working on the RODEO project, is one of these managers responsible principally for leading research in the safety domain. His input in the writing of this case study is therefore contextualised in this frame of reference.

The research department was founded in 1992. It was designed to be the 'knowledge heart' of the company and evolved out of three key initiatives implemented by the man who then became the director of the research department. He had formerly worked for another well-known automotive manufacturer and brought extensive experience with him, which enabled him to implement some ideas that he noticed had also worked well at his former company. The first initiative that led to the 'birth' of the research department was bringing together a group of people who acted as a reference point for the whole company in terms of specific disciplines - people, for example, who had specialist knowledge and experience in working with different materials, such as organic materials, which were seen to be especially relevant at that time because the main business of the company was selling non-metallic, interior trim parts. Secondly, at the same time, work was also begun in the area of acoustic research, also due to the central role it plays in the development of interior trims. And thirdly, the potential to support something new was seen: research in safety and CAE (computer aided engineering), where it was felt interiors could also play a key role in safety. This was a very popular idea in the 1990s but CAE done in conjunction with interior trim development was something very new as it had been previously thought that CAE was only useful for mechanical aspects of car design.

The research department began then as a support department for other projects, as opposed to an innovation centre in its own right. However, in the mid 1990s these initial research activities were upgraded within the engineering group in the department. Engineering in research then started to

be thought of as a real innovation group, initiated to develop new products far away from the comfort zone of the interior trim. They started to work with door and roof trim products but the most recent added value to this department is the electronics department, which is only two years old. It can be seen, therefore that there has been a clear line of development in research activities; one direction has been more innovative and technical, and the other more commercial.

And now another change and stage of transition is being entered into. The research department is now being orientated around a wider range of client services, and people in the department are now adapting in order to work with clients in another way. They don't see themselves as just selling parts and prices anymore, but rather, bigger concepts. And behind these concepts, solutions to problems. The intention now is not just to sell parts or knowledge – but to sell the company way. The company are now marketing themselves as innovators that will support clients in bringing their 'dreams to life'. Behind this offering is an industrial group, but first contact will be made with this new vision in mind.

The company Research Department have already experienced some success with this approach with their interactions with a well-known French car manufacturer. The company was asked by the French car manufacturer to go and offer a single part. However, instead of offering just the part and the cost, a new concept for the module was offered. At the time of writing (October 2004), the company have moved into the development phase of this project with the intention of supplying the part, an opportunity, and support in realising a new concept with the French manufacturer. Meanwhile, the value of providing this service has been realised in that other car manufacturers are now asking about this new system. The concept was presented in a new car at the new auto show in Paris, and as result other European car manufacturer has also shown interest.

One reason for the move to this kind of service offering was competition. Management perceived that while other suppliers may in the future offer cheaper parts, the potential to offer a new way of thinking and new concepts would maintain the company's strong market position. This stands in stark contrast to the company of 10 years ago, which, in the market place, stood out only as a cheaper supplier, and not for its strengths in technology, innovation or new business opportunities. The evolution of the research department has therefore been instrumental in allowing this change to take place because people in the department are given the task of thinking ahead to develop new concepts and design. As a result, when a client approaches the company to purchase a single part they are now also able to sell innovation and the exploration of new ideas.

For company all the above can also be made sense of in terms of key network interactions, as all the developments described also have the added value of the personal dimension. Firstly, this is in terms of the support and personal feelings of a few people on the board of directors. While the CEO is described as a more conservative, economical thinker, always with an eye on the bottom

line of profit, there is also a lot of trust between him and staff based on strong and positive experiences from the past. The 'bottom line' for him in reference to research is that if it helps to sell something, then this is a good thing, but if not, then it isn't. But because of the strength of positive experiences in the recent past, a position of trust between key people is allowing this new offering to emerge. As the representative explains: "So if we go upstairs and ask him money to do a new operation as explained above, then 2 years ago he may not have done it, but now he thinks in a different way. He has seen ideas of 2 or 3 people are good."

The people with the 'good ideas' also have more than 25 years of personal experience in the industry and have close and important relationships with most car suppliers. These personal relationships have in turn meant that communication channels were open for the company to hear lots of input from clients regarding their 'dreams and wishes'. These channels have since been diverted to the burgeoning marketing department in the company, where there is now an increasingly systematic approach applied to the collection of clients' new ideas, wishes and dreams. The importance and relevance of history and time cannot be understated, especially in reference to the important relationships built and maintained with French car suppliers. The CEO brought people to work for the company who had lots of experience in other EU countries and good contacts to match - the value of which is now being realised. This successful approach is now being replicated in the company's current activities in the US, where people are being sought who have a good contact network as well as lots of experience.

Key learning points for the company then include that today, in the automotive industry you have to have people who know people, build relationships and are able to build their own lobby. Instead of doing this on a purely commercially orientated basis, the company are now extending this idea to their relationships with other research departments and other clients. The company have discovered that the car industry as a commercial enterprise is not a viable proposition for perceived future needs. Commercial enterprise for the company therefore now means a mix of commercial, technical and expert employees. To realise this new 'way', the representative says: "We have discovered it is better to turn technical people into something new, than turning our commercial enterprise to another direction." The challenges these new changes are bringing include the need to reconfigure the company. The representative says: I think since the commercial department and cost department are not well suited to the new demands being placed on them, a new focus point is being developed in the company based on the new offerings provided by research activities.

<u>The integration and impact of RODEO</u>

A key challenge presented by the RODEO project to the company came in the sense that the idea of robust business development was absolutely new to them. So the main initial challenge was to identify what RODEO could offer, how it applied to the company, and how new ideas and concepts that were supposed to be developed on RODEO could support the company and its

research department. As a result of the above described changes in the evolving research department it was decided there was enough space to do research in such areas, which seemed very far removed from more obvious core interests of the company. So this open-mindedness provided the opportunity to explore the potential benefits of bringing new management theory to the department. In tandem, key employees in the department considered this relevant to other challenges currently confronting them. For example, the changes described above mean that for some people in the research department, roles have changed from being orientated around a few days a week in the lab, to being a few days a week in the airport. This is perceived as an individual challenge to solve, which is difficult to explain and handle. The representative described how he is supposed to be a plastic safety expert, but now spends most of his working time abroad, speaking with clients about new ideas and opportunities. This transition has required some adjustment on his part, but has been something that he can make sense of in terms of RODEO key learning.

At the level of the research department in the company, there is now consideration being given as to how to put RODEO ideas into practice. The representative describes this thus: “We have moved from a ‘wait and see’ position, to ‘see how we can put it into the department’. There is not a list of items to implement. We feel that behind RODEO there is something that can support us in our new way of doing things. We can’t say item by item, but we feel there is something that can really help us. Most of these ways of doing things can be related to the ideas of the six principles, and ideas of exploring and exploiting.” Concrete intervention points the company have experienced as an organisation with RODEO include the Starter Kit, an early version of the Context Analysis Kit and Strategy Landscape – now known as the Opportunity Exploration Kit (all in February 2004), as well as the ongoing implementation of CompetencyDaq from April/May 2004 until the present time of writing (October 2004). Key learning points and impacts experienced and valued by the company in this context are various.

The Starter Kit has allowed the company to move from the 6 principles to something more concrete and tangible. Representatives feel that both the past and current situation of the department can be explained using the terms of the starter kit. These ideas of history, edge of chaos, pattern recognition, etc., explain or give names to something that everyone agrees are synonymous with the experience of company employees, said the representative, this being the main point for them. He further elaborated: “The first time we experienced the starter kit and the ideas, we didn’t see how it could be useful for us. It was a fun game, with new ideas etc, but now, when we are thinking about our next period of activities and our 3 year plan, we are talking in the words offered by the starter kit. Even when we are talking about the budget – it’s funny to see how [*the department head*] defined some trends and lines based on these ideas. For example, he introduced proposed new lines of activity in the context of the history and time of the previous year. Taking this into account, patterns that had emerged became obvious and it was easy to explain the need for the research department to make a move to exploitation type activities instead of doing the same exploration work.

Elaborating things in this way made it clear that is was time for us to change into money makers. [*The department head*] also explained this is the context of comparison with another department's patterns, where over the last two years they have moved into a new pattern, and he suggested it was necessary for us to do the same."

The implementation of the Context Analysis also made a significant impact within the research department of the company. The representative explains: "This exercise pushed [*the department head*] and I towards thinking in this way, about exploration and exploitation. Before we did similar things in a different way but this was now a more systematic way. Since then we haven't done more. But it is expected that **the final presentation of the budgets to the CEO this year will be based on this context analysis**, to show where we are and where we now want to be, linked to new movements in the department. **We think this context analysis is going to help us to show the CEO how the department will work over the next three years. For us it is a very systematic view of things that will have a very clear impact on us**."

Out of all the tools developed and implemented within the company so far, the Strategy Landscape tool was reported to have had the weakest impact, perhaps due to its nascent stage of development at the time. However, from what the company have seen of new versions of the tool under development, they report they are now expecting it to be closely related to resource allocation, and are expecting to see the final version help them plan their budget and tools for their next period of activities. At the moment they report carrying out opportunity recognition as previously – according to the 'thumb in the air' method – and currently conduct no real resource allocation with the use of a tool.

The fourth RODEO impact and intervention within the company has been with the CompetencyDaq tool, which was implemented as a prototype version one in April 2004, and is still being used and iteratively developed until the time of writing, October 2004. More than 20 people at the company have been involved in the testing of this tool. The tool generated a lot of interest and positive feedback when first introduced and after 6 months of use within the organisation employees have now been able to provide very constructive criticism that has contributed to the further development of the tool. As a result of these observations further developments are being made and are envisaged for future possible research and versions. In the meantime the company are working to analyse what results they do have to visualise possible ways forward based on this data. This is in line with other company intentions based on RODEO impacts and interventions. Their current plan is to formulate the ways and the means to realise the benefits of all the RODEO tools in the coming year after the RODEO project has finished. In this regard, the representative says: "We are thinking about doing some initial sessions to put these ideas into the system. At the moment only a few people are thinking in this way. We are going to prepare a plan to introduce to 40 or 50 people in the department, with starter kit for example, to see the impact at the department level. At the moment we are planning this."

The company suggest that RODEO has already influenced some concrete changes and turning points with the organisation, as outlined above, but also in the way that the 6 principles have provided another perspective and language to describe the way things happen in the company. This can be demonstrated using the example of the representative's work in the safety area. He relates the story thus: "We had the idea that the safety ideas and issues would have an impact on the company's market area, so we started to move in all possible directions to collect information about it. We put a lot of effort in trying to identify how we could maximise potential in this area. While we were doing this we felt as though we were in the middle of a boiling pot, really like the edge of chaos, not knowing which direction this new burst of activity would take us. We were moving from knowing very little, to collecting as much information as we could. What emerged was that we discovered there were a lot of diverse approaches; each client has their own way of doing things. We realised it was up to us and our decision to choose our own way to do things. More concentrated and focused work on the safety area appeared as something new. And we started to work with the university, which was also something new. Instead of working with other departments, we did things with the university. So this was a big new thing that emerged. And as this process continues we have seen that this kind of collaboration can be applied to most research areas. Instead of working by ourselves we now think, 'Why can't we work with the university'. Because of this a new pattern is emerging because now other departments in the company are doing the same – we started a pattern."

The present outlook, prospective sense-making

Current changes and transitions underway in the company Research department include a reconfiguration of the whole department. At the time of writing they are currently in the process of developing the new department structure and making sense of how it will affect and require the reconfiguration of the whole company. It is thought it will have an impact in the development of the other departments. Thus a period of organisational turbulence is anticipated where individuals at different hierarchical levels within the company will have to interact in order to recognise and change things. It is anticipated that new areas of importance and new ideas will emerge. But this current turbulence is not just perceived to be internal. The previously mentioned new service that the company offers to external clients is also initiating changes and transitions in the market place which are as yet still unknown. However, this turbulence is seen as positive and the company appears robust in the way they handle this, as the representative said: "We have discovered that creating turbulence is the best way for the department to grow – for as much noise as we make, we receive the equal amount of resources in return."

A key learning point on the back of this is that management within the company feel they 'now have to moderate the turbulence creating rate'. Persisting challenges within the research department are being experienced in similar ways throughout the company, it is reported. The pattern which has

been noted can again be described by the representative: “In the beginning, all sub-departments in the research department were experiencing similar things. There was a time in which they created a lot of noise with limited resources, there were people under a lot of stress working on ideas they thought only they had. And then the pattern changes. When this noise turned into opportunities, then the resources appear. When the opportunities turn into real projects, then most resources disappear because they are being used for development purposes. Then the pattern seems to repeat. But, there is a fractal-like exponential pattern development, because, at the start, we had 2 people working on an idea, then 4, now 8. At the same time the department has grown through these cycles.”

The benefits and future role of the 6 principles acknowledged so far by the company are various. They report having found that the introduction of new ways of doing things is more easily explained to people using the 6 principles or concepts that are behind the changes underway or that are required. The representative explained: “If you try to convince people to work in a certain way, the 6 principles help to explain it, instead of moving around thinking, thinking. Look at the patterns, and say, ok you have to move from this stable position, put yourself in some edge of chaos situation, then move out and let something emerge. So it could be useful for us. We now have to convince people to make changes in this way. We feel rodeo has some tools for us to help convince people.”

Therefore the learning organisation approach offered by RODEO has also facilitated some kind of change management initiative based on understanding the organisation through the 6 complexity principles. However, it is important to emphasise that what was produced did not have this intention behind it. The way this is being implemented and currently thought out by the Research department is described by the representative: “First, we want to change people, their way of thinking. Then we will ask if the system is starting to move with this new concept and way, and then can go ‘upstairs’, and say ‘look at this’. We are trying to do the same in this manner as we have done with passive safety issues. At the beginning it was thought of as the expertise of people who sat in a room who you went to with problems to ask them about. Then we realised it wasn’t useful if we limited this knowledge to just a few people in a room but that this has to be taken to all the people in a project. And now people have started recognising the need for this because we can see the benefits and profits.”

Therefore, current visions, intentions and ideas for a way ahead based on the 6 principles is beginning to emerge quite strongly among Research department management. The representative articulated this clearly: “We hope to do something because, now, we have a strong feeling… there are no quantitative parameters yet and we are not sure if such a thing is needed. It’s the same as having to go upstairs to ask for money for a tool for a part. The ultimate decisions are based on profit or non profit. But because we now have a background of positive experiences they trust us, so we plan to use the same approach to make the 6 principles work for us. Maybe our argument for the CEO will be to explain to him that this is the new way of doing things that

we want, and have started to do and use. People will join us in this new way with more ease if we put some ideas into practice. But, we will take it in as a low profile proposition though – because they think in terms of the financial bottom line. For this group of men handling 7000 people all over world what we intend to do will be a small detail, and maybe understood as a change management tool. But we still have to show him that this is something good for him. In the meantime we are hoping to see something else emerge too. For us it is clear there will be a new line of innovation."

CHAPTER 25

CASE STUDY 7– A German Automotive Supply Manufacturer

By Carol Webb

Case Study 7 is about a company that began in 1978/9 as a supplier of punching parts to the automotive supply industry in Germany. At this time there were not many other services offered around this core activity. They continued as a pure supplier until 1999. Nowadays, however, they are working towards being a solutions provider, including broader development services and support. In the past they report having been very focused on individuals inside the organisation, and now say they are trying to become a more stable base in a wider market. There are more people in positions of responsibility now than before, and the associated burdens and feeling of risk is therefore not so big. The risk was previously felt in terms of the company being run as a family business, where if a key member left for any reason, they would have had serious problems, because of lost competencies and customer contacts. They are now working pro-actively to distribute responsibility and engagement in the development process within the organisation and to enhance the possibilities of increasing customer contacts.

Key network interactions for the company can be articulated in terms of starting a joint venture, or strategic partnership, with a plastic moulding company. The company representative working on the RODEO project explains: “We thought about, or heard form customers, that the future of the automotive industry is not only in selling single parts, but also services and components. So we looked for four companies who could help us to sell or to produce plastic moulded non-iron metal parts. And we found one who fit very well to our company culture. And now we are selling solutions and components under the company’s brand name.”

Key learning points, concrete changes and turning points for the company in the recent past have included 3 tangible outcomes:
1) Starting a joint venture, or strategic partnership, with a plastic moulding company;
2) Signing an exclusive contract with a sales company. The sales company in question offers competencies, not parts or goods. Each competency is matched with a partner and this case study company is the partner for punching and tooling.
3) Receiving investments in the quality department. In 2004 they invested nearly 2 % - a very high investment.
Some of these changes have occurred since the beginning of the RODEO project and their impact on the company has been felt during the lifetime of the project. For instance, the search for a partnership in plastic moulding began at the start of the RODEO project. The contract with sales company was signed 6 months ago at the time of writing (October 2004).

The RODEO project itself has also been partly integrated within the company and has had some impact. Challenges and concrete intervention points were felt through the implementation of the **context analysis** and **strategy landscape** workshops in their early stages of development. Key learnings that arose out of these interventions included the importance of not being afraid of turbulence or seeing it as a negative thing. The representative explains: “We learned that if your company is able to handle turbulence, then you are a good company. The ability to handle turbulence is a key success factor. Not only to handle, but also to deal with it and use it, to see as a chance and opportunity. At the start of RODEO, we were afraid of changes, turbulence, and complexity, and now we see it as a chance and we are a more self confident organisation now. RODEO has helped us to think about that.”

As a result of these interventions concrete changes and turning points have been felt by the company in terms of their perspective and lessons learned from the wider market in Germany. Seeing themselves as part of a wider ecosystem of business opportunities and possibilities, they were able to learn from the example of a steel delivery company, Mannesman. The representative explains: “In the 90s, Mannesman became the second strongest mobile telephone company in Germany, and in 2002 or 3 they were bought by Vodafone. The point is though that they came from a classic industry background – steel – nothing to do with mobile phones. But the steel market in Germany had been suffering very hard so Mannesman were forced into trying some new business ventures, which they did successfully with mobile phones. This story had no direct impact on the case study company in question, but it demonstrates how wide options can be. So now an extreme case might be for instance that in ten years time this company could find itself selling sweets – this is not likely, and is definitely not planned, but we now see that such an unimaginable leap is not so impossible! Our learning over the past few years has opened our minds. And this fits with the ideas of RODEO – to not be afraid of changes. In my opinion, the problem of SMEs, especially in Germany, is not going about daily business; it is much more than just is what is on the table. They have no chance to open their minds! RODEO is a process that can open minds, especially of conservative SMEs. And it is worth it because it is a chance to be more robust. RODEO has changed our psychological business perspective – if you are not afraid you are more self-confident.”

In reference to the impact of the 6 principles on the company there was less significant learning. When asked to consider how and to what extent the ‘6 principles’ articulate the experience of the company it was not really possible for the representative to answer, because the company had not tested the Starter Kit. Added value for the company had instead been felt in terms of the RODEO context, robustness, complexity and business development as broad themes. But, after discussing this for a while it was clear that there was some appreciation of how the company fitted into a bigger picture where the principles applied. This was in terms of making sense of the longer term history, and the bigger external business environment where patterns are observed and felt by the company to indicate future possibilities for them, e.g. as in the case of Mannesmann.

In a loose sense the representative had also made some personal observations based on his own interpretation of the 6 principles. For example, self-organisation for him meant having room and time for things to flow together naturally somehow. He related this to the company and said that allowing this to happen in the company depended on the position of the person in charge and whether they were at management or production level. He explained: “It is ok to give time for things to emerge at the management level. But other employees are more afraid. They seem to want to have clear guidelines and to be told what to do. They don’t seem comfortable with what they perceive as too much responsibility. The production team and the company are part of the culture, the family team. They are part of the development of the company. Management are trying to think now how they could involve the production team in business development. At the moment it is still a challenge.”

But, at this moment in time, it is not seen how all the principles could apply to the organisational level. However, the representative says this is in the minds of management, and has not been dismissed as entirely impossible. Reasons why the Starter Kit has not been introduced in the company so far were attributed to the issues mentioned above pertaining to the level of people. The representative said, ‘It is a question of relevance. Even the management level employees’ work is based on production line work. No-one in management has studied management academically – the new CEO has, but he has only been here a few months and is still in a learning phase.” There is therefore the perception that to engage in something like the Starter Kit requires that participants be somehow academically experienced or trained in management, or be engaged in more management-like activities. In spite of this however, and following discussions with the representative, it was suggested that there was definitely an opportunity to introduce this kind of tool somehow, but it still wasn’t clear in which way would be best for the company. The idea was proposed that it may be worthwhile to engage in this as a learning process with other SMEs locally, in a network in the same way as the RODEO Swiss industrial partners. In this sense it was considered there may be an opportunity for practical, hands-on managers to experiment with the Starter Kit to see its potential value and ways of applying its benefits in company, e.g. team building, confidence building, empowerment, etc.

<u>The present outlook, prospective sense-making</u>

Current changes and transitions being experienced by the company have to do with the three main changes mentioned above. There is also a new discussion emerging at the moment to do with the possibility of expanding services into the Czech republic, but this is still only a discussion. Persisting challenges for the company include finding and increasing new customers. They can’t see too far into the future at the moment, says the representative, as the contract with the sales contractor is still too short. As a result they intend to wait a few months and see how the ‘land lies’ then.

The future role of the 6 principles in the context of the company case is still unsure. They report not knowing how the 6 principles are fully relevant in the

company apart from in the sense of understanding themselves as a company in a bigger picture. There is obviously the need for them to experiment with the Starter Kit in order to answer this question. When the company took part in the Context Analysis and former Strategy Landscape tool they report having made sense of the 6 principles to some extent by means of a story telling approach. The representative explains: “With the 6 principles you can explain the things you are doing. If you want to change something and you don’t know why you did this before, there is no reason to change. So you need the 6 principles. Here you did something labelled as self-organisation, or edge of chaos, good or not? This helps if things are going in wrong way, you can define them and work on changing them if necessary.”

The company reports feeling very comfortable within the current company and market situation, but says that they have now learnt that it doesn’t matter what the company and market situation is in reality. Just feeling ok helps. Of course, it is not only ‘feeling’ that matters, says the representative: “The balance sheet still matters. Each year a profit rate of 8 to 15 per cent minimum is needed. So it’s a balance between maintaining profit margins and risk. Risks are that we are a family owned company, and a lot of our own money is in the company. Therefore, personal survival issues are paramount - like in every SME all over the world. We really feel it. So feelings are important.”

The question of how an economic value could be put on feelings. The representative continued: “When the economic situation in the EU changes, and the economy is going down, companies are dying, and the unemployment rate is increasing… if this is the case you must give the person in charge the feeling to be able to survive and continue in spite of these challenges. It doesn’t help to give up or feel bad. It’s clear that RODEO isn’t the only way to help companies survive, but it is important and part of it. If you don’t have money then it’s a problem, but RODEO can help you feel comfortable about entering completely different markets. In my opinion, if you feel good, you are good, if you feel bad, you are bad. This company is making a lot of money at the moment so the new CEO may not see the need to invest in a confidence boosting tool like that offered by the RODEO process. But if a company is going down then it may be easier to sell to a CEO in need. Rodeo is not a classic approach which tells you to fire people and downsize, but it is a new thing that is creative. In the best case, you should combine RODEO with a financial solution. Sell RODEO to companies in the following situation: ones that have been going downhill over the past few years, but that are still not at the lowest level. Tell the CEO that the RODEO process will help turn around situation. An important factor though is that these people need to be open-minded. In order to sell this to conservative minded people, you will need to change them into open minded people!”

CHAPTER 26

CASE STUDY 8 – An Austrian Technology Centre Service Provider

By Carol Webb

Case Study 8 is about a company that started in 2001 as a service organisation for the association of technology centres of Austria. It was their task to link all the technology centre managers together to facilitate public relation work, to service them with information about government subsidies, to help them with their work, to organise meetings and events, and to assist them in management issues. A development which occurred during the lifetime of the RODEO project was the buy-out of this organisation as a company in 2003. It was then turned into a privately financed company, by the new owner and previous Director. This company then had to set up new services to be sold on the market for profit. Key network interactions of significance to the organisation still strongly revolve around their relationships with technology centres and associated SMEs, public organisations and consultants. These interactions are based on the need to organise events and exchange information, and in brining companies together to partner with others. In this sense the company sees themselves as a network partnership broker and hub.

A key learning point, concrete change and turning point came for the company most strikingly in recent history with the company buy out by the Director, who explains: “My decision to buy the company arose because I had built up a network – a personal network that I can use for the future and partnering opportunities. I have personal history in being an entrepreneur, and recognising opportunities and alternatives has always been important to me. I am comfortable with risk, sometimes too much! Also, at the beginning of this year, a former colleague left the company. She had played a big part in managing our activities in relation to EU projects so her loss had a big impact. But there was a personal advantage in her departure for me because I have now benefited from being in the project and EU process and have been able to see what I can do with the results coming out of the project.” The integration and impact of RODEO presented certain challenges for the company director, who admitted being unsure about the term ‘robustness’ but had also decided that it had its place in the context of a growing company in order to develop. He also felt that robustness was something of a task. “If an organisation is growing steadily,” he said, “then it is a sign that it is a robust organisation.” Concrete RODEO intervention points experienced by the company included the Starter Kit and Context Analysis workshops, which in turn offered key learning points and impacts for the director in his company role. He describes this thus: “The 6 principles of complexity gave me a picture of complexity theory. As a manager I was very keen to hear what complexity theory could serve me with; as ‘news’ for managing or strategy work. There is a kind of a new implication from this theoretical stuff that I could expect to help me in management. I imagine this will be a key point for

marketing this process. Self organisation and the edge of chaos are the most interesting concepts for me. Then the third, pattern recognition, then unpredictability and diversity. If I think about business development, it is interesting to use the 6 principles to get new ideas to develop new products and markets, the organisation, or whatever. So always to go along with these 6 principles has helped me. But you can't just have self organisation in a company; you must also have an established organisational form. All six principles only work in connection with standards already in use in management and leadership."

The director then compared the 6 principles with established management principles and existing management philosophies, and asked himself what was the difference: "Self-organisation seems to stand against the idea of a planned organisation. If you compare the edge of chaos with planning orientated management principles it could make you avoid chaos, except in the combination where it is useful to use the first with the latter. Standard management practices seem to make you avoid chaos. But it is useful to think what is going on at the edge of chaos, for example, the opportunity to think about new markets and new organisational forms and business development. In reference to diversity, well you have diversity and equality as concepts and principles in established management principles already, as with ideas of the importance of history and time. So there are a few things that don't bring anything especially new. Unpredictability is present in another sense, in terms of its counterpart 'predictability' determined by market figures etc. So in this case it is interesting for me to compare what I already know with the complexity principle idea. For pattern recognition, if I compared, in established management practice there is the issue or item recognition. Therefore the RODEO perspective is of pattern recognition being more finely tuned to smaller changes based on the senses."

The director assessed the differences in terms of his perceived added value as a manager: "The biggest difference for me is what I found in self organisation and the edge of chaos, which I could even see leading to a USP. As I mentioned, I compared the RODEO Process with a standard business development process. Standard processes begin with building awareness, and is then followed by an analysis stage. Within the analysis stage there is a description of gaps and the opportunity to analyse strengths and weaknesses, competencies, planning processes, planning strategies and operational activities, but you have to follow the first step with consultant coaching. At that stage you are still in the planning and analysis phase and have no execution as yet. So, comparing this with the RODEO process, you have the Starter Kit for building awareness. Then you have the Context Analysis kit for gap analysis and strength analysis etc, and maybe competencies. Then you have the third module which has CompetencyDaq and the other Opportunity tool – this is still part of an analysis and planning process. The assessment is an analysis and description of gaps and competencies. But what is missing is the execution part. I will need someone who coaches me and consults to lead me through this process. I will need a manager to execute follow up activities and planned strategies."

The director also engaged himself in the task of trying to find the core definitions of the process. He related having had positive experiences of the RODEO process in allowing him to achieve adaptability in a robust way in turbulent environments. He acknowledged that the process has allowed him to provide approaches, solutions and methods to meet the business development needs of organisations operating in turbulent environments. However, he found it a challenge to relate to the outputs of the project in terms of 'strategy formulation, organisational design and performance management'. He said this wasn't tangible to him, but that it was possible to see how **the RODEO process could turn changes and risks into value adding opportunities**, and that this could be a measurable result of the process. The director added: "This is the definition of result originally defined, and it is a USP I have experienced." In reference to the concrete changes and turning points that the RODEO process can initiate, the director related that being aware of the 6 principles allows you to perceive and react to opportunities more readily. In this sense he suggested it was also a marketing approach. He said: "You analyse trends and changes on the market with this approach, and you can try to use it for the development of your strategy for developing new products and markets. It is a customer-focused approach on the needs of markets and customers."

It was possible to elaborate an outline of how and to what extent the '6 principles' articulate the experience of INNA – in terms of self-organisation/emergence; edge of chaos; diversity; history/time; unpredictability; and pattern recognition. In his role as Director he said it had helped him find new alternatives and opportunities. He explained: "For example, for me, building up and assisting the management of virtual enterprises, I have been able to recognise self organisation taking place in a virtual enterprise and this has been very helpful. Many new things emerged as a result of each partner following a certain path by himself, which was only led by a process of loose project management. The bigger emergent picture at the end was something that grew out of this process. And the edge of chaos is very important in creating a virtual enterprise. There are partners which should be complimentary. It is very important to hear what they have, what their opinion about the consortium is, how it could work, and how the tasks of such a consortium could be implemented as well as the advantages of such an enterprise. The potential of self organisation is very important for such an organisation because you can benefit by distributing commitment, risks and results. Within this company, having an eye on self organisation going on between different people gives us the possibility to see what the potential of a person is. If he/she is doing the kind of work as they would like to do it, and if we let them do it this way because we value the bigger emergent picture, it's also like the edge of chaos. My feeling is that if you 'let it happen' you get some new results out of this process. For example you could get new customers through good collaboration and communicative skills. This has happened and been recognised in the company."

The director reported pattern recognition as being interesting for him as a manager to reinforce the importance of getting signals from the market in order to be able to offer new services or products. He said: "If you think about

these new signals or needs you get to the planning stage very quickly, or to the point where you can design new products and services. We also did this, for instance, with virtual enterprise building and planning services." However, the director admitted that 'diversity', 'history/time', and 'unpredictability' were less important for him because he had not felt their importance as strongly as the other principles. He said: "They are there, but not as apparent." But retrospective sense-making using the 6 principles has allowed the director to articulate how some things have happened over time though. He explained: "Company services - for example, virtual enterprise services, market entry assistance for technology companies, the publishing of the new innovation journal - which we are planning now, emerged from this process of seeing new patterns of movement along the edge of chaos, and by letting it happen in a self organising way." Therefore, the dimension of time is the unit of analysis which makes it possible to recognise the importance of the other principles.

The present outlook, prospective sense-making

The company is currently experiencing certain changes and transitions. The director describes these thus: "The main thing is that we are discussing with partners about the offering of the existing and planned services. We are thinking about marketing these services with potential partners who we have addressed. These conversations are ongoing and there is no clear outcome as yet. At the same time the issue of the estimate of demand for our services is important. We are currently experiencing changing competition - we are not sure what the big consulting companies are doing or what the new formations of innovation networks are like yet. There is some development going on that we cannot really determine now. So there is some element of risk and opportunity in these developments." In tandem with these challenges and opportunities represented by changes and transitions, the director also articulated some of the company's persisting challenges: "We are always faced with how to maintain a profit and organise our activities efficiently in an efficient enterprise. We are always faced with the challenge of how to develop our products – our services – and how to estimate the market and the competition around us. And of course how we decide which opportunities to grasp - the right opportunities." The potential future role of the 6 principles in this company's robust business development activities is still emerging, but the director could nevertheless articulate how he imagined he would pursue maximising the potential of the RODEO process within the company: "If we think about business development, strategy or planning, we want to use the 6 principles in addition to existing methods. Another role is we are interested to use the developed RODEO Process as a consultant – it could be interesting for us as a new product, and as a complimentary offering to the services we are already offering, e.g. setting up virtual enterprises, and new product development. This is the exploitation point. If we assist in setting up virtual enterprises and product development, the 6 principles as a business development process help. Then we also intend to think how to use the process in the same way for own company. This company is steadily growing but it doesn't feel robust at the moment because of the ongoing changes, but we are confident the RODEO Process will help us to deal with this."

PART 4

Outlook: Turbulent?

This part of the book summarises key lessons learned and some future implications for business and research based on the findings of the research and development of the RODEO Process.

CHAPTER 27

THE IMPACT OF THE RODEO PROCESS

By Carol Webb

This chapter presents some of our key findings, especially in reference to some of the lessons we learned about the relevance of applying complexity science principles to organisations, and this value this presents.

Coherent Perceptions of the Modern Business Organisation Grounded in Complexity Science principles

At the beginning of the RODEO project, the team set out to "**explore and create a coherent perception of the modern business organisation**, grounded in complexity science principles." The extent to which this has been pertinent is described at high level below.

References in parentheses (such as (CS1)) following key statements, refer to the case study in which more information and context can be found, e.g. (CS1) means Case Study 1, which can be found in this book.

For industrial partners, RODEO, by means of complexity science principles has:

1. **Created a mirror for the company, by:** Providing a mirror for the company (CS7, CS8); Providing a theoretical basis to explain that what the organisation has been doing (CS5, CS6)
2. **Created a way to articulate intangibles, by:** Confirming the importance of intangibles that were previously acknowledged intuitively (CS5); Re-affirming previously intuitively held notions about the organisation (CS6); Rationalising intuitive robust business development (CS6); Creating an awareness of important ideas such as the independence of interacting agents (CS7).
3. **Created a way to see how to balance organisational activities, by:** Offering a new lens in balancing between enabling and navigating; giving support in managing "creativity" by focussing on the balance (CS5).
4. **Created a way to manage control, by:** Making an impact on business development by offering a new approach where control is put on probation and hopefully set apart (CS5); Offering new, valuable ideas that complement traditional ideas such as the imperative of planning everything in detail, avoiding chaos and trying to predict things (CS8).
5. **Created a coherent perception and process of service and knowledge expertise areas, by:** Providing an entirely coherent process with the service and knowledge expertise area of key individuals (CS2).
6. **Created a perception of the organisation which takes into account theory, practice and relationships, by:** Providing a complementary offering in terms of theory, domain of practice, and network relationships (CS2).
7. **Created a perception of the organisation which facilitates generation of future potential, by:** Facilitating a change in the perception of the organisation through the 6 principles (CS6); Providing the potential for the

short and mid term future of the organisation (CS2); Facilitating an opportunity to maximise the potential of the RODEO Process in reference to particular services and networks (CS2); Facilitating organisational development because of such a consolidation of theory and practice (CS2).

8. **Created another way to practice business development, by:** Establishing one way of many ways to practice business development (CS6).
9. **Created the means to add to pre-existing success, by:** Adding to pre-existing success of the organisation through and introduction of the 6 principles (CS6).
10. **Created some future challenges, by:** Creating the challenge to implement some radical ideas (CS7); Created fear of self-organisation among some employees who want to be told what to do and do not want to work in a responsible, self-directed way directed towards emergent outcomes at the collective scale (CS7); Created the need to use the starter kit (which was not used by CS7) as a way to overcome such misunderstandings (CS7).

Links with Organisational Learning

Implementation of the RODEO Process has demonstrated a significant link between the organisational learning field and complexity science as transferred to organisations by means of the 6 principles. Organisational learning became significant in that IPs: Experienced learning challenges; Responded to learning challenges; Learned about themselves; Made lessons learned; Fostered relationships with each other to learn and by learning; Learned with each other; Integrated learning from other sources; Applied learning; Developed new ideas out of learning; Constructed a way forward out of learning; Learned about learning. In the sense that individual learning was applied and new ideas came out of learning, and key individuals from SMEs were able to construct a way forward together through their learning, they arguably affected and re-defined the structure of their organisations (see e.g. CS1-4), which corresponds to the definition of organisational learning used on the RODEO project. Organisational learning became significant in that IPs:

1. **Experienced learning challenges**. IPs: Learned a lot from RODEO but were faced with the challenge of how to continue alone after the project end (CS1-4); Initially encountered complexity science, studies, theory and ideas were as difficult, challenging and abstract (CS1-4); Experienced many benefits and impacts of the process that centred around the topic of learning (CS7).
2. **Responded to learning challenges**. IPs: Responded by focussing on organisational challenges, problems and business patterns, and undertook this in the context of inter-organisational learning (CS1-4).
3. **Learned about themselves**. IPs: Found that new ways of delivering services was important for the business (CS5); Found that management activities and decisions have to support this objective (CS5); Realised that a balance is required between “growing” or “maintaining stability” (CS5); Learned about their identity and their key strengths (CS7); Recognised the potential of initiating a learning process with other SMEs locally, in a network, by experimenting with the starter kit (CS7); Re-affirmed themselves as a network partnership broker and hub, in which they foster communication and learning between different partners (CS8).

4. **Made lessons learned**. IPs: Learned that turbulence is not a threat (CS7); Learned that leaving room for experimentation is really necessary (CS7); Learned that chaos does not only happen in nature - it is also part of daily business life (CS8); Learned to have greater patience with things and people (CS8); Learned to decide where the edge of chaos makes sense and where not (CS8); Learned at the personal level through the RODEO Process that self-organisation needs a frame to make sense, a structure and rules (CS8).
5. **Fostered relationships with each other to learn and by learning**. IPs: Built on trust and confidence that was already present at the start of their interactions with each other (CS1-4); Fostered more trust and confidence between them to the extent where communication and mutual understanding allowed other things to happen (CS1-4).
6. **Learned with each other**. IPs: Valued interactions with each other as a form of providing an external viewpoint (CS1-4); Realised objective/observer point of contact with subjective sense-making was a form of inter-organisational learning (CS1-4); Made sense of their own turbulent experiences and were able to proceed by themselves to develop their businesses parallel to changes, key learning and intervention points with the RODEO Process (CS1-4).
7. **Integrated learning from other sources**. IPs: Recognised that involvement with the other EC project, Symphony, was important: synergy between these projects and the inter-organisational learning which has gone on around their development has contributed to their inter-organisational learning around RODEO (CS1-4); Integrated the RODEO Process in the learning successes that proved to be valuable in the past (CS5); Learned from the past in terms of trust (e.g. between top and middle management) (CS6); Learned from the past in terms of positive personal relationships (e.g. between CS6 and a French car manufacturer) (CS6).
8. **Applied learning**. IPs: Benefited from knowledge and understanding of 6 complexity principles as applied to themselves, their organisations and network interactions (CS1-4); Learned to be self-confident in the face of changes (CS7).
9. **Developed new ideas out of learning**. IPs: Enabled novelty, spontaneity and creativity to emerge through inter-organisational learning (CS1-4); Acknowledged the importance of the 'frame', including having enough resources and time to allow emergence to be viable (CS1-4); Realised that collaboration and networking might be profitable (CS5); Realised that collaboration and networking is profitable in the direction of universities as well as industry (CS6).
10. **Constructed a way forward out of learning**. IPs: Generated the idea of creating a Swiss association to promote the complexity approach through networking; decided to focus on developing organisational and individual competencies facilitated by the development of internal frames of organisational learning (CS1-4); Found added value in the RODEO process that has now provided the foundations for their own interconnected futures where learning in the complexity domain is recognised as key to robust network development (CS1-4).
11. **Learned about learning**. IPs: Reaffirmed that the aspect of learning is of high importance on a personal as well as a corporate level and for its network/clients (CS8).

Lessons for Complexity Science & Studies

RODEO industrial partner case studies also demonstrated lessons learned about the application of complexity science in the organisational domain. We found that the application of complexity science to the organisation: has value for SMEs; increases perceptions of network robustness; facilitates confidence building in networks; facilitates the understanding of communication problems; facilitates the articulation of intangibles; provides enhanced organisational perspectives; increases sensitivity to problems; provides temporal insight; compliments existing management theory and practice.

1. **Value for SMEs:** Complexity theory, science, ideas or studies has value for networked SMEs encountering uncertainty in turbulent business environments characterised by high degrees of changes and transitions (CS1-4).
2. **Perceptions of robustness in networks:** An approach to networked business development based on complexity principles is one that makes participants in this process feel that the process is robust (CS1-4).
3. **Confidence building for networks:** Confidence in their own future based on networked interactions with each other and others (local and global), grounded in complexity principles 'makes sense' to them (CS1-4).
4. **Understanding communication problems:** The new language provided by the 6 complexity principles facilitates the understanding of communication based problems in terms of describing previously not explicable phenomena (CS5).
5. **Articulating intangibles:** Robustness is achieved by delivering a way to articulate previously not describable phenomena or situations and to explicitly focus on the principle related factors (e.g. edge of chaos => finding balance to support creativity) (CS5); The 6 principles derived from complexity science help to close the gap between intuition and rationality (CS6); The 6 principles deliver a language to articulate previously not describable phenomena or situations (CS6).
6. **Enhanced organisational perspectives:** Current ways of seeing and understanding an organisation did not provide as relevant answers to some things happening in the organisation (CS6); Complexity provides a way to see the company in a mirror (CS7, CS8).
7. **Sensitivity to problems:** The complexity principles have helped the company to be more sensitive to their problems and to find solutions for them (CS7).
8. **Temporal insight:** Complexity has provided insights on the impact of history for them (historicity) and on possible future possibilities (patterns) (CS7).
9. **Complimentary management theory and practice:** Complexity know-how can be used for strategic planning (CS8); Some of the principles seem to be in line with established management principles and existing management philosophies and some seem to challenge them (CS8); Self-organisation seems to stand against the idea of a planned organisation (CS8); If you compare the edge of chaos with planning orientated management principles it could make you avoid chaos, except in the combination where it is useful to use the first with the latter, whereas standard management practices make you avoid chaos (CS8); It is useful to think what is going on at the edge of chaos, e.g. by having the opportunity to think about new markets and new organisational forms and business development (CS8); Diversity and equality appear to be pre-existing concepts and principles in established management

thinking already, as with ideas of the importance of history and time (CS8); Unpredictability is already present in another sense, in terms of its counterpart ‘predictability’ determined by market figures etc. (CS8); It is interesting for managers to compare what they already know with the complexity principles, e.g. the RODEO perspective of pattern recognition is about being more finely tuned to smaller changes based on the senses (CS8).

See full case study summaries for further context and explanation. The next chapter outlines some of the implications we derived from project findings, and suggests the meaning of these for European business in the future.

CHAPTER 28

THE FUTURE

By Alex Bading & Atai Ziv

This chapter proposes the long term implications of the developed RODEO Process based on an integrative analysis of business implications to European organizations and future research recommendations.

The long term implications attempt to answer the following questions:

- What are the long range business implications of the RODEO project findings and learning to European organizations (in terms of their position of competitiveness, sustainability, and growth)?
- How can European organisations benefit from a systematic approach to this issue and from the RODEO Process in particular?
- What are the new and evolving socio-economic trends & challenges that may change the basic assumptions implied by the RODEO Process and that may form a basis for the "next generation" of Robust Business Development tools?

The long-term implication research process reviewed the emerging results of the implementation of the RODEO Process with industrial partners and the potential impacts of such results. As will be seen in the following section, while some findings approve initial expectations others point to unexpected outcomes.

MAIN FINDINGS

In a turbulent age, the only dependable advantage is a superior capacity for reinventing the business model before circumstances force the company to. The RODEO project focus was to achieve the facilitation of organisational adaptability and robustness in turbulent environments. The future socio-economic trends analysis indicates that all European organisations from various industries and of different sizes will continue to face some level of unpredictability, turbulence and change in the next era. The project results came from our own evaluation and validation process, as well as specific workshops and questionnaires. The findings suggest several long-range business implications to European organisations, in terms of competitiveness, sustainability and growth. This section presents what those long range business implications of the project findings are, in addition to learning useful to European organisations and how can they benefit from the RODEO Process.

This chapter includes a discussion of findings and implications based on our own project evaluation and validation process; a benefits analysis of the RODEO Process from a strategy formulation, organizational design and

human resource management perspective; and, a re-assessment of the long term qualitative benefits of the RODEO Process.

Discussion of findings and implications based on the project evaluation and validation process

In this section our project evaluation and validation process key findings are discussed and elaborated in general, and in terms of their implications to European organisational competitiveness positions, sustainability, and growth. The following nine key findings were identified**:**

Finding 1: *The RODEO Process enables businesses to deal systematically with adaptation to both evolutionary and revolutionary change trajectories.*

Finding 2: *The RODEO Process reminds managers that an organisation is a community of human beings in business to stay alive.*

Finding 3: *The RODEO Process has increased diverse types of organisational competitive sustainability: organisational level competitive advantage; advantage in ambiguity; added value for clients; SME regional level competitive advantage; and advantage in the market place.*

Finding 4: *The RODEO Process enables organisations to learn and identify the specific ways they should practice pursuing robust and sustainable business development.*

Finding 5: *The RODEO Process facilitates organisational efforts to achieve "fit" between what it does and what its business environment requires today, while also preparing itself to stretch capabilities and evolve its culture to tackle the new environment that tomorrow might bring, by identifying a relevant and context specific course of action.*

Finding 6*: Industrial partners in the RODEO consortium have confirmed that in an environment where the future is unpredictable and unimaginable, management becomes a matter of managing change and preparing to change continually.*

Finding 7*: The RODEO consortium has explored and created a coherent perception of the modern business organisation, grounded in complexity science principles. In particular, management roles, control and organisational intangible assets have been explored.*

Finding 8: *Implementation of the RODEO Process has demonstrated the significant linkage between the organisational learning field and complexity science (as transferred to organisations by means of the 6 principles).*

Finding 9: *RODEO industrial partner case studies demonstrated lessons learned about the application of complexity science in the organisational domain.*

Finding 1: ***The RODEO Process enables businesses to deal systematically with adaptation to both evolutionary and revolutionary change trajectories*** *through:*

- *changing their perspective & seeing a bigger picture*
- *learning how to converse about change*
- *making sense of patterns*
- *empowering all parts of the organisation through interactions with others*
- *understanding the past to address the future*
- *navigating around the edge of chaos*
- *developing organisations*
- *managing change;*
- *and, managing people.*

Lengnick-Hall and Wolff (1999) claim that a systemic change is a continuous, relentless process. Complex systems constantly coalesce, decay, change, and grow. System parts (e.g., people, units, firms, industries, processes) are constantly bumping into each other and causing chain reactions of one sort or another. European organisations in the coming decade will have to deal with both evolutionary changes (e.g. consequences related to predicted changes such as EU enlargement, growing global competition, demographic shifts) as well as potential revolutionary changes that might be driven from new technology, changes in regulation, etc. Future adaptation of European organisations to such changes will have to start with a shift in the perspective of managers, both in terms of sense-making in the business environment and in terms of gaining a better understanding of internal organisation dynamics.

Lewin and Regine (2003) mention leadership paradoxes. The fundamental paradox in the emerging leadership style is “leading by not leading”. Since processes unfold in complex systems in unpredictable ways, leading organisational change cannot come about by simply adhering to a conventional command and control approach, which is essentially linear. To accept non-linear outcomes, an uncontrollable approach and uncertainty demand nothing less than a personal transformation of the leader. The role of management according to Olson and Eoyang (2001) is to help clients identify their significant differences, to establish transforming exchanges that will make the differences generative, and to articulate the self-organising patterns that emerge. The RODEO Process provides the means for the manager as an individual and the organisation as a whole to undergo the necessary transformation in order to deal with adaptation. Furthermore, it provides a method to articulate and understand the need for change, or the actual emerging changes, and possible consequences (risks as well as opportunities).

Weick (2000) explains that an organisation operating in turbulence should constantly incorporate a sense-making process. In the sense-making view, people in the organisation try things out, discover what they are doing as they experience the outcomes of their actions, and then analyse the relationship of these actions and outcomes to make sense out of their experience. Their

sense-making becomes codified as a strategy when they claim to have intended what they actually did (Hatch, 1997). The RODEO Process helps to sense-make in a turbulent business environment and identifies emerging patterns. Organisations in general and SMEs in particular will have to better understand the dynamics and complexity of their business environment in order to adapt faster and better. A coherent approach that enables organisations to better deal with the need and the act of adapting can benefit organisations.

In scientific terms, it is understood that so-called Complex Adaptive Systems (CAS) have a sense of historicity. This means that, although the future behaviour of a CAS cannot be extrapolated from the past, the past of this system is still important for its present and future situation. Companies thus should be aware of their past and make use of their experiences. The past also provides insights into the various multi dimensional relationships between internal stakeholders, networking partners, competitors and clients. Effective adaptation of European organisations to a future characterized by increasing globalisation, increasing competition from the Far East, political, demographic and cultural changes would not be possible with out paying attention to Historicity as an important factor.

The long-range implications to European organisations from finding 1 can therefore be summarized in the following way:

- → European Organisations in general and SMEs in particular will have to better understand the dynamics and complexity of their business environment in the future in order to adopt faster and better. The RODEO Process can help to sense-make in the business environment and identify emerging patterns by providing coherent approach.

- → The RODEO process can provide European organisations the means for managers as individuals and the organisation as a whole to undergo the necessary transformation in order to deal with adaptation. Furthermore, it provides a method to articulate and understand the need for change, or actual emerging changes, and to understand possible consequences (risks as well as opportunities)

- → Effective adaptation of European organisations to the future is characterized by increasing globalisation and competition from the Far East as well as political, demographic and cultural changes. This transformation would not be possible with out paying attention to Historicity as an important factor

Finding 2: ***The RODEO Process reminds managers that an organisation is a community of human beings to stay alive*** *through the avenues of networks, communication, managing people, corporate identity, leadership style, project management, entering new markets, and financial management.*

Zimmerman (2000) defines the three words that describe Complex Adaptive Systems (CAS) in the following way: Complex implies diversity or a great number of connections between a wide variety of elements. Adaptive suggests the capacity to alter or change or the ability to learn from experience. A system is a set of connected or interdependent agents. An agent may be a person, a molecule, a species, or an organisation among many other things. These agents act based on local knowledge and conditions and are semi-autonomous units that seek to maximise some measure of goodness or fitness by evolving over time. Stacey (2000) adopts a more radical perspective to strategy formation based on complexity that he calls Complex Responsive Processes of Relating (CRPR). Intention emerges in the self-organising process of ordinary conversation between people. Change occurs in novel ways through the presence of sufficient diversity in organising themes. This is expressed in free-flowing conversation in which shadow themes test the boundaries of the legitimate. Managers cannot think of themselves in terms of organisational designers but rather as active participants in a complex process. The RODEO Process, grounded in complexity science principles, incorporates human factor issues that can support the organisation as a community of human beings.

Several trends in human factors will affect European organisations in the future. These factors include: a shift in the ratio of mind/physical interactions – the shift to a knowledge economy continues, demographics – the aging population problem accelerates, new working modes, mobilization and restructuring, the changing role of women, the outsourcing of jobs, and life long learning. Management methods and approaches that would not incorporate a strong focus on such human factors would stand to lose its significance in upcoming decades. The RODEO Process can contribute to European organisations by offering a way to articulate and review in a holistic way the management role, human factors and business development, using the perspective offered by the 6 complexity principles. The long-range implications to European organisations from finding 2 can be summarized in the following way:

→ Several human factors-orientated trends will affect European organisation (as mentioned above). The RODEO Process, based on complexity principles, can offer the means to articulate and review in a holistic way of management roles, human factors and business development.

Finding 3: *The RODEO Process has **increased diverse types of organisational competitive sustainability**: organisational level competitive advantage; advantage in ambiguity; added value for clients; SME regional level competitive advantage; and advantage in the market place.*

Increased organisational competitive advantage was reported by the industrial partners following the RODEO Process implementation. However, as claimed, the types of advantaged are diverse and it was hard to pin point a specific general advantage. RODEO set out with the assumption that "it is clear that there will be no general answer as to why one organization is more successful than another", which was therefore validated by our research. From a complexity-inspired perspective a particular predictive equation will only be a valid description of events and relationships as long as a specific system structure is maintained. Just because a given tactic worked once, it cannot be counted on to work again (McDaniel & Walls, 1998). The constant interplay of positive and negative forces can't help but produce new patterns and outcomes in a never-ending cycle. Co-evolution results from interdependent webs or networks experiencing "cascades of change" (Lengnick-Hall and Wolf, 1999). New forms of relations between industry players such as both competition and co-operation will be necessary for sustainability. In summary, complexity thinking concentrates on designing and maintaining integrated, but non-linear, system-wide processes with the expectation that they will yield a variety of useful results (Lengnick-Hall and Wolf, 1999).

Managing the business according to the RODEO Process can provide competitive advantages to European organisations operating in diverse unpredictable environments in the long term. However, the specific type of competitive advantage will emerge from a variety of sources.

The long-range implications to European organisations from finding 3 can be summarized in the following way:

→ The RODEO Process can support European organisations in identifying new forms of relationships with industry players (e.g. co-opetition)

→ By adopting the RODEO Process, European organisations can benefit in the long run through competitive advantage. However, the type will be context specific and will emerge from a variety of sources.

Finding 4: *The RODEO Process enables organisations to learn and identify* ***the specific ways they should practise pursuing robust and sustainable business development****.*

'Business development' was defined by the RODEO team as the holistic and continuous process of developing and aligning products, services and market combinations with the organisation's people and competency sets. To ensure robust and sustainable business development, organisations have to learn how to conduct business in terms of their context specific case. Hamel and Valikangas (2003) believe resilience should be the new strategy of surviving organisations. In a turbulent age, the only dependable advantage is a superior capacity for reinventing the business model before circumstances force the company to. "Strategic resilience is not about responding to a one time crisis…it's about continuously anticipating and adjusting to deep, secular trends that can permanently impair the earning power of a core business - it's about having the capacity to change before the case for change becomes desperately obvious" (Hamel and Valikangas, 2003). The RODEO Process, based on the six principles provides the perspective and processes for individuals and organisations as a whole to find unique ways to change, transform, partner and manage competence at a specific time. The approach, though externally facilitated, is based on a perception built by the organisation and not necessarily analysed and provided by external consultants. In many cases, complexity also means that firms and units can generate intelligent, effective responses to the need for change without externally imposed plans or directions by self-organisation.

European organisations are diversified by culture, size and industry. A context specific process that enables organisations to learn in what ways they should practise robust and sustainable business development could provide substantial benefits for European organisations in terms of growth and sustainability.

The long-range implications to European organisation from finding 4 can be summarized in the following way:

→ The RODEO Process can support European organisations in identifying new forms of interaction with industry players (e.g. co-opetition)

→ The RODEO Process can help European firms and units to generate intelligent, effective responses to the need for change without externally imposed plans or directions by self-organisation

→ European organisations are diversified by culture, size and industry. The RODEO Process can provide a context specific approach that enables organisations to learn in what ways they should practice robust and sustainable business development in order to attend to their unique needs at a specific time.

Finding 5: *The RODEO Process facilitates the organisations* ***efforts to achieve "fit" between what it does and what its business environment requires today, while also preparing itself to stretch capabilities and evolve its culture to tackle the new environment that tomorrow might bring****, by identifying a relevant and context specific course of action.*

The RODEO Process sheds light on challenges, such as finding the relevant competencies needed for each new service or action. Organisations are then helped to face these challenges in the rest of their experience of the RODEO Process. Reasons organisations recommend following the Process are numerous, but include the belief that there are opportunities beyond frontiers and these give the opportunity to actually develop a more robust business that is adaptable and recognizes opportunities from what is emerging. Wood (1999) proposed the following definition of strategy based on complexity: "The process by which an organisation generates, develops, and maintains a robust business design capable of both exploiting its current distinctive capabilities (its fitness function) on or near its current fitness peak (and) exploring its strategic landscape and business ecosystem for entrepreneurial opportunities beyond the lifecycle of its current business design (its sustainability function) away from its current peak". The management has a proactive role as enabler to set the direction that is bounded by the rules (both written and unwritten), by which a firm exploits and explores the landscape and business ecosystems. Exploitation rules are what must be followed and implemented to make organisations economically viable and politically legitimate with stakeholders. Exploration rules define how to search the strategic landscape and business ecosystems and what is being looked for (scanning) for economic survival.

The balanced process offered by RODEO in terms of in *achieving "fit" between what it does and what its industry environment requires today, while also preparing itself to stretch capabilities and evolve its culture to tackle the new environment that tomorrow might bring"*, could assist European organisations in transition. As seen in the socio-economic trends analysis transition in most industries in general and traditional in specific will be unavoidable in order to survive. The transition will be in business models, organisational structure and networking relationships (due, for example, to cultural, demographic, technological and business environment changes). Enduring robust business development has its price in terms of resources spent on diversification and experimental nature. Robust business development should exploit existing competencies to allow a stream of revenues that can be used partially for exploration of "*entrepreneurial opportunities beyond the lifecycle of its current business design (its sustainability function) away from its current peak*".

Organisations ensure a blend of intended and emergent strategy formation process. However, while leveraging existing competencies, aligning competencies to needs, or partnering to overcome gaps, are part of the intended process, little attention is given to emerging needs in a systematic way. The RODEO Process and tools offer a unique way of identifying emerging competencies and emerging competency needs. The business implication for European organisations adopting the process could be increased growth, sustainability and competitive advantage.

The long-range implication to European organisations from finding 5 can be summarized in the following way:

→ The complexity based approach offered iby the RODEO Process can assist European organisations to maintain a robust business design capable of both exploiting its current distinctive capabilities while also exploring their strategic landscape and business ecosystem for entrepreneurial opportunities beyond the lifecycle of their current business design, supporting growth and sustainability.

→ The RODEO Process can improve competence and capability alignment in an evolving way between an organisations current and emerging needs

→ Many European organisations will no doubt face transitions and change in future years. The RODEO Process can make the transition more gradual by tackling the new environments of tomorrow today

Finding 6*: Industrial partners in the RODEO consortium have confirmed that* ***in an environment where the future is unpredictable and unimaginable, management becomes a matter of managing change and preparing to change continually****.*

Through their experience of the RODEO Process industrial partners (IPs) learnt that change is continual, a challenge to be managed, and change in an organisation initiates more change; changes are diverse, context specific, can form patterns, present challenges in maintaining organisational identity and USPs; but, changes bring new opportunities, and responses to change are various.

Mintzberg et. al. (1998) state that: “The external environment is not some kind of pear to be plucked from the tree of external appraisal. It is, instead, a major and sometimes an unpredictable force to be reckoned with. Sometimes conditions change unexpectedly so that intended strategies become useless. Other times environments are so unstable that no intended strategy can be useful…” therefore “In an unstable or complex environment… either the “formulator’ has to be the ‘implementor’, or else the ‘implementors’ have to ‘formulate’. In other words, thinking and action have to proceed in tandem…”

(Mintzberg et. al., 1998, pg 41). The most challenging environmental conditions are associated with the category of high uncertainty. High rates of change and highly complex conditions occur in all organisations at some time (e.g. at the point at which they experience a totally unexpected shift in the environment) and in some organisations much of the time (e.g. organisations heavily involved in new technologies). Hatch (1997) claims that in turbulent situations, strategy is used as a sense-making device to allow organisational members to act and thereby to produce order out of the chaotic experiences.

European organisations in general have a tendency to be reluctant to engage in continuing change. Family oriented SMEs are many times more reactive to changes then proactive in initiating changes. Although most of the companies might not endure high levels of turbulence consistently (except for companies heavily involved in technologies) resulting in high levels of unpredictability, still, preparing for change is significant for several reasons. The first reason is that an organisation operating in a stable environment might not foresee the structural change approaching and needs a certain amount of "readiness to change" at all times. Small ongoing changes might improve the individual and organisational flexibility, sense-making skills and readiness to adapt dramatically when needed.

A second reason to foster constant change could relate to gaining competitive advantage. Guerrilla Logic (Lengnick-Hall and Wolff, 1999) concentrates on destabilising the current reality so that a series of temporary, and often incompatible, advantages leads to high performance. Guerrilla logic relies upon inventive, uncommon and often unconventional means. Strategies based on guerrilla logic deliberately create disequilibrium and foster radical, unprecedented and unpredictable changes in tactics and direction over and over again. Individual initiative is coupled with organisational mechanisms that repeatedly disintegrate and reintegrate activities over time and across projects.

The long-range implication to European organisations from finding 6 can be summarized in the following way:

→ By incorporating the RODEO Process, European organisations can learn to better perceive change as opportunity

→ European organisations in general and SMEs in particular will need to better prepare for future changes. The RODEO Process can help organisations to better manage and prepare for change and by so contributes to sustainability

Finding 7*: The RODEO consortium has* ***explored and created a coherent perception of the modern business organisation, grounded in complexity science principles****. In particular, management roles, control and organisational intangible assets have been explored.*

As we found out in our project evaluation and validation process, in developing a process which is grounded in complexity science principles, the consortium has created: a mirror which presents the company with complex reality, a way to articulate intangibles, a way to see how to balance organisational activities, a way to manage control, a coherent perception and process of service and knowledge expertise areas, a perception of the organisation which takes into account theory, a perception of the organisation which facilitates generation of future potential, another way to practise business development, the means to add to pre-existing success, as well as creating some future challenges.

Managing control is one of toughest challenges European managers will confront when it comes to the time to change. Stacey (2000) points to the fact that complexity science, related to management, has great implications for how the role of the manager is understood. A manager cannot step outside the conversational processes that are part of the organisation simply because their work requires them to talk to others. Therefore a manager cannot stand outside organisational processes and control them, direct them or even perturb them in an intentional direction. All such intentions are gestures made to others in an organisation and what unfolds from ongoing responses. Mintzberg et. al. (1998) perceive the role of leadership as not to pre-conceive deliberate strategies, but to manage the process of strategic learning, whereby novel strategies can emerge. They claim that strategic management involves crafting the subtle boundary between thoughts and actions, control and learning, stability and change. Brown and Eisenhardt (1998) claim managers should chart a course along the edge of chaos where a delicate compromise is struck between anarchy and order. Success is measured by continual reinvention of the organisation. Stacey (2000) claims some research into the decision-making processes of a number of companies reveals that most strategic decisions are made outside a formal planning system, which is outside the bounded-rationality mode of decision-making. The role of management according to Olson and Eoyang (2001) is to help clients identify their significant differences, to establish transforming exchanges that will make the differences generative, and to articulate the self-organising patterns that emerge. Mitleton-Kelly (2003) argues for a different approach to managing organisation through the identification, development, and implementation of *enabling infrastructure,* which includes the cultural, social, and technical conditions that facilitate the day-to-day running of an organisation or the creation of a new organisational form.

It seems that no “clear cut” definition can be provided of the role of management in the modern organisation. Moreover, it seems that the role is constantly changing and is context specific, dependant on the manager’s personality, organisational characteristics, and internal and external environment factors. The “hands on – hands off” dilemma will surely continue to hunt mangers in the future. However, articulating and reviewing through various lenses and contexts the management control and role could be very beneficial in order to retain flexibility, sustainability and improved competitive position.

‘Intangibles’ play a major role in various organisational initiatives and challenges. Although recognized by many and integrated into a manager’s intuition, coherent articulation of intangibles is lacking and rare. The RODEO Process, by means of the 6 principles, offers individuals and groups effective ways to articulate the intangible aspects of the business. Various social-economic trends, such as EU enlargement, the molecular economy, growing competition and cultural changes, point to the fact that intangible aspects will impact European organisation of all sizes and sectors.

The long-range implication to European organisations from finding 7 can be summarized in the following way:

→ The RODEO Process can offer a new perspective to the role of management. European mangers, by incorporating the RODEO Process will benefit from improved control management and a new effective way to articulate the self-organising patterns that emerge as well explore intangible dimensions

→ The RODEO Process, based on 6 complexity principles, can provide European organisations with a mirror which presents the company with its internal and external complex reality

Finding 8: *Implementation of the RODEO Process has demonstrated the significant* ***linkage between the organisational learning field and complexity science (as transferred to organisations by means of the 6 principles)****.*
Organisational learning became significant domain to RODEO as the industrial partners:

experienced and responded to learning challenges
learned about themselves; made lessons learned
fostered relations with each other to learn and as a result of learning
learned with each other
integrated learning from other sources
applied their learning
developed new ideas out of learning
constructed a way forward out of learning
and learned about learning.

The learning process is a correction in the organisational interpretation of an organisation's environment. Changes in the environment lead to an aging of the related interpretations. Learning, in that sense, is accomplished if this is recognized and corrective measures in interpreting the environment are taken (Argyris et al. 1978). March, for example (1991), distinguishes two forms of organisational learning: *exploitation*, in the sense of improving the existing set of rules in an organisation; and, *exploration*, in the sense of completely questioning these.

Organisational learning will be essential for European organisations operating in turbulent environments in order to conduct trial and error experiments of behavioural rules and corrections of interpretations of the environment. Learning as a process will have to evolve and shift its shape and blends in a constant way in order to support the changing needs. Self-organisation, the edge of chaos and diversity are only some of the complexity principles that can serve as lenses and tools within organisational learning (i.e. six principles) on hand, but can affect the essence, need and process of organisational learning on the other.

The RODEO project has presented a case study where a unique form of learning emerged. The "Swiss partners" have conducted a unique learning process that included representatives from different companies that as a group using the complexity principles tried to improve the individual understanding of their company and personal context. Such a form of exploratory learning could serve as an example for many European organisations for sense-making of various complicated multi dimensional business dilemmas in the context of their relationships with other SMEs.

The long-range implications to European organisations from finding 8 can be summarized in the following way:

→ For European organisations learning as a process will have to evolve and shift its shape and blends in a constant way in order to support the changing needs. Organisations implementing the RODEO Process will incorporate new insights to their learning process at the individual, group, organisation, and network (inter-organisational) level.

Finding 9: *RODEO industrial partner case studies demonstrated lessons learned about* ***the application of complexity science in the organisational domain****. RODEO industrial partners found that the application of complexity science to the organisation: has value for SMEs; increases perceptions of network robustness; facilitates confidence and trust building in networks; facilitates the understanding of communication problems; facilitates the articulation of intangibles; provides enhanced organisational perspectives; increases sensitivity to problems; provides temporal insight; and, compliments existing management theory and practice.*

Lissack and Gunz (1999) claim complexity thinking provides insight at two levels. It introduces *metaphors* for visualizing the thinking about organisation and management, and it provides novel *models* for making sense of the world of organisations. One of the unique contributions of RODEO is overcoming the challenge of presenting complexity science to organisations and making it accessible. Complexity science offers a new perspective for individuals and groups to understand the multiple-aspects of the internal and external environment in which they operate. By understanding industries as complex systems managers can improve decision-making and search for innovative solutions and non-obvious and indirect means to achieve goals. In many cases the approach is complimentary to existing management methods broadening and deepening the understanding, enhancing intuition and supplying the means to improve communications and articulate on intangibles. The application of complexity science in the organisational domain can hold a vast array of benefits at various organisational levels and contexts. The deep understanding can improve the co-existence of emerging and intended strategy. While small European organisations will use this knowledge mainly to interpret networking relationships and their co-evolving relationship in the market, managers in large organisations can better understand the internal relationship between stakeholders and various organisational functions as well.

European organisations will most likely confront changing environments in the next decade in terms of human resources, culture, structure and changing business environments. A new non-conventional perspective is needed to retain a competitive position and gain a leading edge. Sensitivity to problems and attending to them in a more holistic way can reduce their impact and in some cases turn them into an opportunity. Pure rational management thinking would have to integrate new organic approaches that are fit to attend to unpredictability and organisational dynamics. The application of complexity in the organisation domain can be substantial to the sustainability of organisations in general and to some traditional industries that will have to shift their business model and structure due the growing competition from the Far East and EU enlargement in particular.

The long-range implications to European organisation from finding 9 can be summarized in the following way:

→ The application of complexity science in the organisational domain can provide European organisations with deep understanding that can improve the co-existence of emerging and intended strategy. While small

European organisations will use this knowledge mainly to interpret networking relationships and their co-evolving relationship in the market, managers in large organisations can better understand the internal relationship between stakeholders and various organisational functions as well.

→ Complexity Science in general and the RODEO Process in particular can provide a new perspective on traditional industries. These new lenses can assist in building new concepts and initiatives needed for adoption, sustainability and growth.

Benefits analysis of the RODEO Process and tools from the perspective of strategy formulation, organizational design and human resource management

In this section the benefits from the RODEO Process will be described at a high level - what benefits will the RODEO Process, as a *complexity-based* robust business development approach, bring to an organization? And at a more detailed level, relating to the benefits for the *three areas of influence* within RODEO: strategy formulation, organization design and enabling environments for human resources. In conclusion the *long term qualitative benefits* from the RODEO Process are presented.

Generally it is expected that the application of a systematic business development approach (with management and a working frame, a clear vision and simple rules) will help companies to better define their objectives, to develop change processes and measures for performance management and to motivate people via transparent information and communication processes to participate constructively in these processes of transition. The specific quality of the RODEO Process (and its main differentiation point to other business development approaches) lies in *reference to complexity science,* which becomes manifested especially in the *six complexity principles*, and the deployment of these scientific ideas to *real business practice*.

Complexity science has been found a very interesting resource to be used in the context of management science (as proven by the industrial partner case studies) in that they applied explanations and principles to daily-working experiences in an innovative way. This applies also for the special case of networked SMEs, encountering uncertainty in turbulent environments. The RODEO Process outcomes provide a common approach for all innovation-related projects within and in-between organizations, which helps to make contact with other pioneering people within and in-between organizations and which makes participants in these projects feel that the processes are robust. The six principles approach was appreciated by the industrial partners as being very helpful: it focuses the various insights gained out of the scientific complexity studies on six principles, which was appreciated as a good (manageable) number to work with. Also it was appreciated highly, that the RODEO Process provides a management process that is not focused on the rational focus of change management processes as with more traditional tools (of which there exists a lot), but instead provides the soft/people/intuition part, of which there exists still very few on the market.

The RODEO Process outcomes based on complexity science, deliver further knowledge on the features of turbulence and business development in turbulent environments and their application makes organizations more robust by getting used to turbulence, transforming it into new opportunities and by focusing future activities on sustainability, competitiveness and growth.

The benefits brought by RODEO Process benefits **at a high level** can be summarized as *a new lens* based on the insights on *complex adaptive social systems* and *six relevant complexity principles*. The incorporation of this new lens leads to a fruitful *learning process* within the organization on three levels:

- Individual learning (self-perception, the role of the individual in the organization, interconnectivity)
- Organizational learning (capability to adapt and change, networking)
- Inter-organizational learning (capability to adapt and change in and with a network)

This perspective also provides *an holistic view* of the organization as a complex adaptive social system, which is comprised of the turbulence of the internal and the external environment at the individual, organizational and inter-organizational level. The implementation of the six principles lead to a new way of *sense-making* and *problem solving approach*, beyond traditional planning processes. European organizations, which apply the RODEO Process and thereby acquire a new lens, benefit from the *achievement of robustness*, which is characterized in RODEO terms mainly by the following qualitative indicators:

- improved competence development,
- capability and understanding of transition and change,
- better (holistic) problem solving.

In the following, these high level benefits of RODEO will be considered at a more **detailed level** by describing the benefits that the RODEO Process comprises in reference to the three areas of influence within RODEO: strategy formulation, organization design and human resource management. These results have been derived out of the industrial partner case studies as well as out of interviews and workshops with the industrial partners.

Rodeo benefits - strategy formulation

The difference between strategy formation and formulation can be explained in the following way. According to the rational models of strategy, the formulation stage of the strategy process flows from the analysis. The goals of the formulation are to discover ways to leverage opportunities and to close performance gaps by: consideration of alternative courses of action intended to achieve and/or maintain the fit between environmental needs and organisational abilities, establishing criteria for selections among alternatives, and comparison and choice among alternatives (Hatch, 1997). The plans for

the future as mentioned are referred to as intended. Fully realized intended strategies rely on the artificial separation between formulators and implementers while emergent strategy does not. In the case of emergent strategy the term formulation has to be replaced by formation because here strategies can form without being formulated, although strategies do not have to be purely emergent. To allow for the fact that they can be, or more realistically partially are, the term Strategy formation is preferred over Strategy formulation (Mintzberg, 1994).

The RODEO Process helps to develop the understanding of all participants, via collaborative learning processes, as to what makes a strategy adaptive to turbulent environments and therewith to a main *robustness enabler*. As examples, important features that might be (company specific) appreciated and implemented by the participants are:

- Identity development (values, core assets, behaviour, roots, etc.)
- Harmonization of identity and image
- Forecasting methods implementation (handle the conflict of unpredictability and forecasting)
- Identification and prioritisation of internal and external turbulence drivers
- Acknowledgement of turbulence as potential for new market opportunities
- Balance of exploitation and exploration roles
- Features of the strategy formulation process itself, as required time and resources, emergence of strategies on all hierarchical levels, integration of more people

The *application* of the RODEO Process lens within the strategy formulation process and therewith the above described understanding of the strategy as a *robustness enabler* led to *tangible benefits* already during the last RODEO project phase, as the following examples of the industrial partners show:

Findings	**Benefit examples given by the Industrial Partners**
Finding 3: *The RODEO Process has increased diverse types of organisational competitive sustainability: organisational level competitive advantage; advantage in ambiguity; added value for clients; SME regional level competitive advantage; and advantage in the market place.*	▪ Use the principles to analyze their own services from the customers view out of six lenses (historicity: what does the customer need, emergence…), this let to a new vision (full product and service supplier) ▪ Recognition of new opportunities, tackling the markets in new countries ▪ Identification and further development of a key competence, which was set up as a new business field
Finding 4: *The RODEO Process enables organisations to learn and identify the specific ways they should practise pursuing robust and sustainable business development.*	▪ Collaborative revaluation of the identity ▪ Development of a common department strategy instead of adding small areas strategies ▪ Development of a bundle of tasks to handle the turbulence drivers ▪ Rodeo insights are integrated in the

	strategy formulation process itself (more time, integration of more people in process, combination of top-down and emergence) ▪ More emergence of new ideas
Finding 5: *The RODEO Process facilitates the organisations efforts to achieve "fit" between what it does and what its business environment requires today, while also preparing itself to stretch capabilities and evolve its culture to tackle the new environment that tomorrow might bring, by identifying a relevant and context specific course of action.*	▪ Helped to formulate strategies, by means of looking from inside and from outside to initiate business development ▪ New business fields were identified and targeted ▪ Better balance of the exploitation and exploration role
Finding 6*: Industrial partners in the RODEO consortium have confirmed that in an environment where the future is unpredictable and unimaginable, management becomes a matter of managing change and preparing to change continually.*	▪ Identification and prioritisation of internal and external turbulence drivers ▪ Turbulence was transformed to a real market potential ▪ Recognizing change was perceived as continual ▪ Understanding change can bring new opportunities

Rodeo benefits - organization design

According to the strategy formulation, the RODEO Process helps to develop the understanding of all participants, via collaborative learning processes, as to what makes an organization flexible and adaptive to turbulent environments and therewith to a main *robustness enabler*. As examples, important features of organization design that might be (company specific) appreciated and implemented by the participants to achieve robustness are:

- Enabling of self-organization and emergence
- Appreciation of relationships between all people
- Flexibility and mobility of people
- Creation of simple, but strong rules
- Collaborative organization design processes
- Balance between re-action and pro-action
- Capitalization of corporate assets in emerging business
- Pattern recognition
- Acknowledgement of the value of organizational slack

The *application* of the RODEO Process lens and the acknowledgement of the adaptive organization as a *robustness enabler* led during the last project phase of Rodeo to relevant organization benefits, as the following examples of the industrial partners show:

Findings	Benefit examples given by the Industrial Partners
Finding 1: *The RODEO Process enables businesses to deal systematically with adaptation to both evolutionary and revolutionary change trajectories.*	▪ Adaptation of structures to new potentials via cooperation with suppliers ▪ Adaptation of the organization to a new business field ▪ Building up of a new team, based on competencies (emerging competencies were identified indifferent functions). Now the competencies were established in a new organization unit to be closer to customer
Finding 4: *The RODEO Process enables organisations to learn and identify the specific ways they should practice in pursuing robust and sustainable business development.*	▪ Enhancement of robustness of the system, independent from specific individuals ▪ Involvement of the whole management team (normally they are occupied in daily work) ▪ Introduction of new, competency-driven responsibilities ▪ Enhancement of networking and collaboration with partners and other externals ▪ More effective project organization, by sharing the same vision, common language, where people participate in various projects
Finding 7*: The RODEO consortium has explored and created a coherent perception of the modern business organisation, grounded in complexity science principles. In particular, management roles, control and the organisational intangible assets have been explored.*	▪ Fostering of self-organization (therefore the development of competencies became more important) ▪ New mix of people in organization units (diversity), people are changing their roles within one year to share competencies and responsibilities. ▪ Rodeo helped people to accept this, to build up resistance to fear by means of the new lens

Rodeo benefits – creation of an enabling environment for human resources

Corresponding to the RODEO focus, the third area of influence that will be beneficial impacted by the outcomes of the RODEO Process is human resource management. Following a management process, which relates to complexity science, human resources, their actions and interactions, are the main relevant issues for robust business development. People are considered as the real crucial factor to make processes of transition and change robust and work. Therefore, performance management has been focused during the project on issues of an *enabling environment* for *human resources*, especially on learning and competency development.

Thus, a crucial part of the RODEO Process is the development of the understanding of all participants (again via collaborative learning processes), as to how to create an enabling environment that allows people to bring in their unique profiles and to develop their competencies. As examples,

important features of an enabling environment (which shall be shaped as a robustness enabler), that might be (company specific) appreciated and implemented by the participants are:

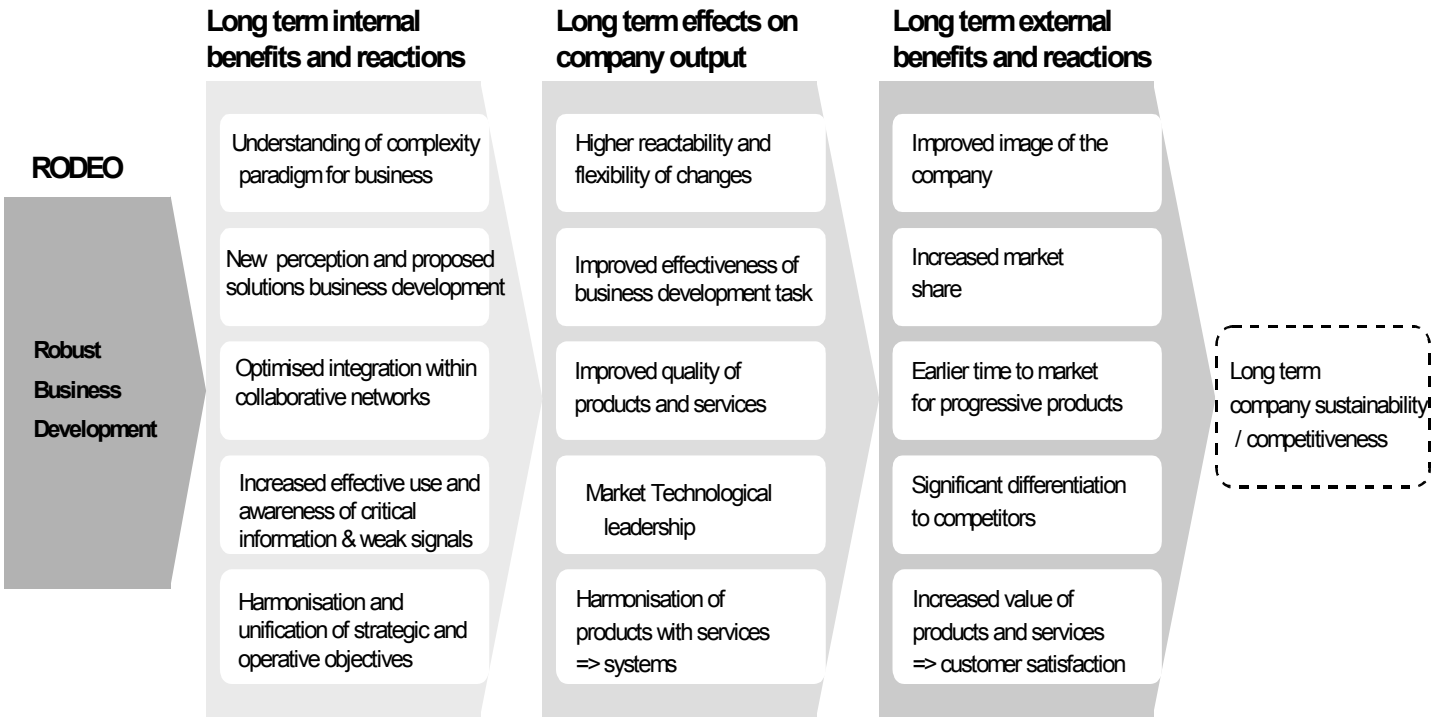
- New understanding and perception of robustness and turbulence
- New self-perception of organization members as part of a whole
- Autonomy for individual motivation
- Internal confidence and trust
- Common values
- Understanding and handling the leverage of conflicts and misunderstandings
- Communication and interactions (connectedness inside/outside company)
- Enabling IT infrastructure
- Competency development (emergence, diversity of competencies)
- Enabling of learning processes as well as of novelty, creativity, spontaneity

The following benefits were identified (examples of the industrial partners, achieved mainly during the last project phase):

Findings	**Benefit examples given by the Industrial Partners**
Finding 2: *The RODEO Process reminds managers that an organisation is a community of human beings*. .	▪ People better understand now their specific role and that they are part of the whole process ▪ People from different hierarchic levels and functions are brought to the same knowledge ▪ New self-perception of managers (personal level): Rodeo helped the managers to keep more relaxed, to accept chaos and emergence and turbulence. It helped the managers to accept, that they can bring positive things in but cannot steer and control all processes. ▪ Growth of trust and confidence led to communication and mutual understanding, that allowed novel things to emerge
Finding 8: Implementation of the RODEO Process has demonstrated the significant linkage between the organisational learning field and complexity science (as transferred to organisations by means of the 6 principles).	▪ Learning in the complexity domain was recognized as key to robust network development ▪ Fostering inter-organizational learning in an SME-network enabled the emergence of creativity, novelty and spontaneity in the network ▪ Development of new competencies (the importance was recognized in RODEO)

Assessment of the long term qualitative benefits of the RODEO Process

At the beginning of the RODEO project the expected long term qualitative benefits for European organizations were depicted as shown in the following figure:



Assumed benefits from the Rodeo approach (2003)

In this section, the actual achieved RODEO outcomes will be presented in relation to these expected benefits on the basis of the industrial partner case studies.

By analyzing the above figure, it stands out, that most of the expected benefits of RODEO were described as qualitative indicators. This fits with the experiences, findings and learning of the RODEO team that the integration of complexity science to business development processes and tasks will lead in the first instance to benefits of a qualitative nature. These benefits were described in the above chapters inter-alia as a new way of (self)-perception, as learning and holistic problem solving. The exploitation of these qualitative benefits will lead in a second step to tangible benefits: for example to the creation of a new business field, which increases the market share and which provides a significant differentiation to competitors (relating to an example of the industrial partners, which corresponds strongly to the figure above).

The assessment of the long term *internal benefits and reactions* (please see the next figure, column 1) leads to the conclusion, that all of these targeted benefits have been achieved within the RODEO project by means of the RODEO Process, most of them by several industrial partner organizations:

Expected long term internal benefits and reactions	Degree of Achievement of the expected benefits and reactions	Tool/method support (which can be implemented in other organizations beyond RODEO)
Understanding of complexity paradigm for business	All industrial partners understand and acknowledge the application of complexity sciences to business practice	Starter Kit Context Analysis Kit
New perception and proposed solutions for business development	All industrial partners state, that they have a new perception of business development and that they benefit from the six principles as a learning process and problem solving approach. All industrial partners tested and appreciated one/several modules of the RODEO Process	Starter Kit Context Analysis kit Rodeo Tool Guide (CompetencyDaq, Opportunity Exploration and traditional tools that fit to the complexity principles)
Optimised integration within collaborative networks	Seven industrial partners already foster their integration in networks, two industrial partners acknowledge it as a forcing task to build up networks	Starter Kit Context Analysis Kit Opportunity Exploration Tool
Increased effective use and awareness of critical information & weak signals	Six industrial partners have participated in both, the starter kit and the context analysis. Within the context analysis it is a main issue to identify and to manage the turbulence drivers which can be already evident or are still hidden turbulence drivers. All six organizations appreciated the process as an effective method to identify new market potentials. Two industrial partners tested and appreciated the CompetencyDaq that provides crucial information and signals for required competency development.	Context Analysis Kit CompetencyDaq
Harmonisation and unification of strategic and operative objectives	Seven industrial partners used the context analysis. In four of them, the context analysis impacts mostly their perception of strategy formulation. It was a main issue to harmonize top-down strategy with emergent strategies and to bring it to tangible objectives. One industrial partner used the Opportunity Exploration tool in an early status and appreciated the development of strategic options, which were raised down to operative processes and tasks.	Context Analysis Kit Opportunity Exploration Tool

As the table above shows, the long term *internal* benefits and reactions, expected by the RODEO team before the project began, have been achieved completely. As it was described in the sections above, the RODEO Process is a strong cultural approach, which possesses the potential to lead to

fundamental changes in the perception of individual, organizational and inter-organizational behaviour.

In the following, the long term effects on the company's *outputs* (please see the next table, column 2) will be assessed, in a similar way as before. The RODEO team points out the complexity related approach of the RODEO findings, learning, methods and tools. Following the insights of complexity science, it is not possible to establish clear cause-effect-relationships regarding the implementation of the RODEO Process and its effects, as all output effects of an organization are the result of an amount of variable input parameters and their interactions. Until now there exists no agent-based simulation model that can cover all (soft) parameters of a complex adaptive system, to simulate the cause-effect-relationships of business development approaches. Correspondingly, the tool support, which was related to internal benefits and reactions clearly, will not be related to the companies' output effects.

Therefore the assessment of the long term effects of RODEO *on the companies' outputs* is the result of sense-making processes of the RODEO team concerning the RODEO applications and processes of change and transition within the industrial partner organisations.

Long term effects on companies outputs	Sense-making of industrial partner output effects
Higher reactivity and flexibility of changes	Within the context analysis key turbulence drivers will be identified, prioritized and a bundle of tasks will be developed to manage these turbulence drivers. The implicit approach lies in the six principles as a problem solving approach. Three industrial partners stated, that the application of the six principles approach to business practice leads to quicker change management and decision making processes, as it provides a systematic approach which is quicker than traditional planning.
Improved effectiveness of business development tasks	Within the context analysis key turbulence drivers are identified, prioritized and a bundle of tasks is developed to manage these turbulence drivers (via collaborative working sessions). It is expected, that this process leads to effective business development as all affected people are involved in the context analysis workshops, with the required decision competencies. Moreover the RODEO Process requires a strong promotion and facilitation. It is expected that these issues will also lead to the effective deployment of the outcomes of the collaborative working sessions.
Improved quality of products and services	All industrial partners stated, that they achieved by means of the RODEO Process, and collaborative learning processes, a holistic view and a new and better problem solving approach. Besides, the RODEO Process provides concepts and tools to implement this new lens into daily work processes. Therewith it is expected, that these internal benefits will lead in the long term to improvements in quality of products and services.
Market technological leadership	Same considerations as above, but no real relationship obvious. Not felt in terms of the industrial partner experiences within the lifetime of the RODEO project.
Harmonization of products with services	As all RODEO partners appreciated, the RODEO Process provides a holistic view of all processes and tasks as well as

	on problem solving. In the context analysis workshops the complete fulfilment of customer requirements and the perception of the company with the eyes of the customers was a main issue. At least three industrial partners aim for becoming a full problem solver now, instead of being a specific module supplier.

In summary, as the above table shows, the RODEO team claims that the implementation of the RODEO Process initiates a positive impact on the described beneficial output effects of the industrial partners, which were achieved during the duration of the RODEO project, but that no clear cause-effect-relationships can be derived.

The assessment of the long term *external benefits and reactions* (please see next table, column 3) builds in a logical consequence on the realization of the long term *internal benefits* and *reactions*, which are expected to lead to the long term effects on the companies *outputs.* As the assessment of the "second line" benefits (benefits on companies' outputs) is the result of sense-making by the RODEO team concerning the application of the RODEO Process within an organization and of the industrial partner cases, the assessment of the long term *external benefits* and *reactions* will also be built on logical conclusions in respect to the long range business implications of RODEO.

Long term external benefits and reactions	Sense-making on long term external benefits and reactions
Improved image of the company	Within the context analysis the development of the identity of the organization is a key issue. It is essential to understand the past (who are we, where do we come from, what are our core values etc.) to develop the future. The outside perception of the identity is the company's image. It is expected that the reflection of the company's core values in combination with the high reactivity and flexibility to changes will improve the image of the company. As an example, one industrial partner of RODEO reflected its identity and its image as a high quality oriented organization and employed new quality responsibilities as a result of the RODEO Process.
Increased market share	Within the context analysis the strategy formulation, the organization and human resource management will be shaped context specific as robustness enablers. These robustness enablers in combination with the six complexity principles will be used to identify, prioritize and manage the key turbulence drivers. During these collaborative working sessions, the participants gain a new perception of turbulence and acknowledge it as a potential for new market opportunities. The exploration of these market opportunities leads to increased market share. As an example one industrial partner identified a new market potential within the RODEO Process and introduced a new business field for its exploitation. Another industrial partner used the opportunity exploration tool, to identify new market opportunities and to increase its market share in the target market.
Earlier time to market for	It is expected, that the implementation of the RODEO

progressive products	Process in the long term will lead to improved quality of products and services. This, in the combination with the statements of the industrial partners that RODEO provides a quicker problem solving method, which fits to innovation-related projects, allows the expectation that RODEO will help to reduce the "time to market" for new (progressive) products. As an example one industrial partner stated, that the RODEO Process helped them to reformulate their "strategy to innovation" and to define a common process that interconnects the different departments and staff
Significant differentiation to competitors	Within the context analysis the identity of an organization will be developed and key turbulence drivers will be made manageable. The customer view of the organization and how the company can fulfil their requirements from a holistic perspective is a main issue. It is expected that this will lead to a significant differentiation to competitors. As an example, within RODEO five industrial partners worked within the context analysis on this differentiation issue.
Increased value of products and services → customer satisfaction	Relates to all of the statements above. RODEO helps to achieve a holistic view inside and outside the organization, stimulates learning and creativity, and provides methods and tools for effective robust business development as well as a new problem solving approach, based on the six complexity principles. The experiences gained through the implementation of the context analysis workshops showed, that the customer is a main issue. It is expected that this will lead in consequence to increased customer satisfaction. At least three industrial partners aim to become a full problem solving provider, harmonizing products and services. All industrial partners aim to better understand and support customers' challenges.

Summary of the business implications of the project findings and learning

The RODEO Process provides European organizations with deeper yet accessible knowledge and understanding of robust business development as well as processes and tools for Robust Business Development in turbulent environments. The process and tools are based on six relevant complexity principles.

The RODEO Process will stimulate a challenging learning process all over the organisation and will foster a new way of thinking and problem solving based on complexity science.

Companies, who follow the RODEO Process, will be able to perceive themselves as complex adaptive social systems (consisting of different social agents who co-evolve and interact constantly according to simple rules) and will foster the six complexity principles within their organizations. This new self-perception (based on new lenses) will impact internally the way European companies operate, and externally in terms of relationships with customers and portfolios of services.

Following the findings from the industrial partner case studies, the implementation of the six principles internally will lead to a new way of analyzing the way a company usually works and help to identify and

understand several *patterns* of acting (including analysis of failures and successes). As an example, the relationship to business partners can be reviewed in respect of the generation of specific patterns of difficulties and failures using the principle *history & time*. *Self-organisation* is an important principle of social adaptive systems, but it is also possible, that its level should be reduced as processes get out of control and an organization is crossing the *edge of chaos*. Using this principle, companies, especially start-ups and SMEs might find out that they are at a point of time where more (or less) structure is needed in their business development.

The RODEO results have a significant impact on organisational human resource management, especially in respect to employee competencies and internal & external relationships. For example the systematic implementation of the complexity principle *diversity* will enable organizations to build up new competencies and to bring in people with different profiles.

Moreover, executives and employees will achieve a holistic view on the organization and will discover that their individual perception is important, but that they are a part of something whole. The interactions between individuals, teams and the emergence of networks will become increasingly important and the design of an enabling environment (learning, communication, values etc.) will be a central management task.

The actual use of the six complexity principles within the RODEO Process will lead to a totally new perception on leadership within an organization: leadership will not be manifested by specific pre-defined positions within a hierarchical system of structures and processes, but will emerge case by case on the basis of specific circumstances and required competencies.

In respect to customers, products and services, the complexity principles will lead to a new understanding and handling of these external issues. For example, the consideration of the principle *diversity* will help European companies to understand that they miss an extended focus in some business areas, which causes them to miss various market opportunities elsewhere. It will also encourage the organisation to address market sectors and niches and provide products and/or services, which are not the core business of an organization but has the potential to bring profit in the short term and increase sustainability in the long term. The principle of *unpredictability* will help European organizations, to identify several drivers in their customer base that cause unpredictability that they have no impact on, so that they can only try to find ways to learn how to operate in this environment in the future.

The consideration of the principle *emergence* will impact for example the strategic decision making processes, as it enables the analysis and prioritization of opportunities over the whole organisation, not only on top-level. It has the potential to bring the (strategic) decision level down. Also it will balance the generation and deployment of strategic processes: on the one hand the deployment of the vision of the CEO to the middle management and on the other hand the bottom-up emerging of strategies based on competencies and upcoming opportunities.

Accordingly, the RODEO Process will impact the sustainability of companies positively by using the six principles as lenses to review operations and

strategies. For example, it will be applied when a company suffers from a stream of failures in one business area and achieves unexpected success in another area.

In respect to *turbulence* the new lenses defined by RODEO will impact the perception of the phenomenon of business turbulence. Turbulence will be perceived as risk and as a potential for growth at once: By using the turbulence-associated opportunities, new market potentials could be explored. The deployment of this new understanding of turbulence will impact the strategy formulation as it fosters the exploration of new market potentials and provides the potential for a more adaptive “strategy for innovation”. Companies will get used to dealing with turbulence and in addition the feeling of uncertainty, and will achieve the capability to transform the turbulence into market opportunities. Otherwise it is essential to analyze the balance between the exploitation role (reinforcing existing lines; reducing turbulence) and the exploration role (turning turbulence-associated opportunities into real business; generating turbulence) within an organization and to prioritize the “right” market potentials. Therefore the incorporation of the RODEO findings and learning will enable European organizations to focus more strongly on the development of their *identity.* This will deepen the understanding of relevant questions as “where are we, where do we come from, what are our core values and strength, that we are willing to keep/foster in the future?”

The above findings and learning that the RODEO Process can offer European organizations is an opportunity to significantly improve their business development and problem solving processes. All the industrial partners stated that the six principles provide them with a new problem solving approach, applying different perspectives to their business problems, opportunities and strategy. This refers especially to cases where the traditional methods and tools fail to lead to success.

PART 5

And Finally…

This final part of the book includes a section containing a short biographical reference of everyone who participated in the research and development of the RODEO Process, as well as some photographic memories of our time spent together on the project.

In the last section, following the biographies, are the bibliographic references used by the RODEO team in their research and the writing of this book. We hope it may be useful for you too.

BIOGRAPHIES

The Editors:

Carol Webb

Carol gained her first degree, BA Ancient History & Social Anthropology, at University College London (UCL) in 2001. During that time Carol also worked as a research assistant on the UCL Computer Science department's body-scanning project - the Centre for 3D Electronic Commerce - conducting web surveys into virtual shopping technology in addition to leading project communication activities. At present she is employed as a doctoral researcher on the RODEO project, working with an international group of industrial and research partners to create innovative methods for business development in turbulent business environments. On the EC co-sponsored RODEO Project Carol has been involved in knowledge development, development of the RODEO Starter Kit Calendar and Experience Game, and has led the Evaluation and Validation Process. Carol is undertaking a PhD in a related area, and has also recently participated in editing and publishing the book: "Are You Ready to Disrupt It?" with Fiona Lettice, Ron Dvir, and Pete Thomond.

Liza Wohlfart

Liza studied Economics, English and French at the University of Stuttgart, Germany, where she graduated with an MA in 2002. She has worked as both a teacher and in publishing houses. More recently Liza began work with the Fraunhofer Institute for Industrial Engineering (IAO) and the IAT (Institute for Human Factors and Technology Management) at the University of Stuttgart. Her work at IAT has seen her involved in several industrial and research projects, focussing especially on business development, corporate learning and knowledge management. In addition to her work as a technical project manager for IAT on the RODEO project, Liza has been working on the German project *Prodela*, supporting the modernisation processes of public administrations by means of a blended learning solution incorporating e-learning and knowledge management aspects grounded in a community of practice strategy.

Michael Wunram

Michael is currently Department Head in the division of Cooperative Product and Service Engineering at the Bremen Institute of Industrial Technology and Applied Work Science at the University of Bremen (BIBA), in Germany. Before this, he studied Production Engineering at the same University. As a researcher at BIBA, he has been involved in several European projects related to knowledge management (CORMA, EKMF, REMOTE, AUDIOTAIN) and business development (RODEO). In his academic career at BIBA he is focusing on knowledge management in the extended enterprise, and in the application of complexity theory to business development in turbulent environments. In the context of knowledge management in the extended enterprise he developed a framework that enables examination of knowledge management requirements at the interface of companies in order to optimise them and enable a flow of knowledge according to the needs and goals of the co-operating companies.

Dr Atai Ziv

Atai obtained his BA in Management and Economics from the Israel Institute of Technology in 1993 (Cum Laude). In 1997 he received his MA degree in Economics from Tel-Aviv University. In 2004 Atai became Dr Ziv upon successful completion of his PhD in strategy formation at Cranfield University. In previous years, Atai served as an analyst and financial manager in several companies in Israel. Since 1998 he has been a senior manager in a large telecom equipment vendor company in charge of Business Processes. In 2002 Atai joined a consultancy and research practice called Innovation Ecology. He has been involved in a broad range of business consultancy activities, including: portfolio management, risk management, performance management as well as strategy formation using complexity science approaches. Atai has developed several unique tools and workshops for organizations, addressing the corporate management, project and R&D levels.

Other Authors & Contributors from the RODEO Team:

Dipl. Kffr. **Alexandra Bading**, studied marketing, organisation science and management at the Eberhard Karls University of Tübingen. She is a senior researcher and consultant in the Competence Centre for R&D Management at the Institute of Technology Management and Human Factors. Her main fields of specialisation are Change Management and Organisation Design with a special focus on the "soft" human factors, which are fundamental in organisational collaboration and improvement activities. She has worked on many projects, including RODEO, and others in the domains of performance assessment, team organization and modern organisation design.

Marc Boillat is President and Chief Technology Officer at Seyonic SA, based in Neuchâtel, Switzerland. Prior to this, he worked for several years at ICS in Silicon Valley on the development and transfer into large volume production of automotive accelerometers. At the Institute of Microtechnology he developed the micro flow sensor that forms the basis of a number of Seyonic's successful products. He has an MSc in Physical Electronics from the University of Neuchâtel.

Laurent Brouyère is the R&D service manager for the CCSO network. He supports, sets-up and manages international and national R&D projects. He has offered services in consulting, training, and coaching in the field of sustainable organisations and personal development. He has carried out studies in the social and economic fields at the University of Neuchâtel (work psychology) and at the University of Lausanne (counselling). His interests focus on sustainable organisation and individual transformation and learning. His professional activities concentrate on the management of an R&D service and several R&D projects in a networking environment, and on organisational design, development and competence management mandates with industrial partners and training institutes.

Saim Cicek is a Research Scientist in the division of Cooperative Product and Service Engineering at the Bremen Institute of Industrial Technology and Applied Work Science at the University of Bremen (BIBA), Germany.

Dr Ron Dvir started his professional career as a carpenter – specializing in pine wood furniture. This is where he learned the real life facts behind manufacturing, product design and management. Then he became a designer of material handling systems – automatic warehouses, strategic distribution centers, and logistic activities. In the early 90's, Ron worked for ECI Telecom in the area of Total Quality Management. In 1996 he became the first CKO in Israel, and led ECI's KM program. In 1999 Ron established Innovation Ecology, a research and consultancy practice. It focuses on innovation encouraging environment, processes and tools, such as "Future Centers" and Innovation engines. Ron is a member of Entovation Group/Alliance, and he received his PhD. from Cranfield University in 2004.

Professor Steve Evans spent over 12 years working in industry, followed by 12 years in academia. Since 1988 he has continued his interest in World Class Product Development and Concurrent Engineering at Cranfield University. Steve Evans is particularly interested in the implementation of improved product development processes and in bringing environmental and sustainability concerns into product development. He works with blue-chip organisations worldwide to improve their NPD processes and to increase our knowledge of what works. Steve is a graduate of the University of Bath, with a doctorate in Manufacturing Systems. Steve holds the title of Life Cycle Engineering and is currently head of the International Ecotechnology Research Centre at Cranfield University. Steve's main aim is to "work with nice people, save the earth and have fun!"

After finishing high school in Steyr, Austria, **Franz Filzmoser** studied Business Administration and Marketing at the University of Linz. In 1986, after 5 years of practical Marketing and Sales experience in a machinery corporation, he started his first business in automation in one of the first incubation centres in Austria, called LIG Linz. With the experience as a managing director for a small company, he changed to a larger company in the Automation sector, which manufactured automated systems for the construction industry. The company grew six fold within 5 years before he left to establish his own innovation management business. Since April 2001 he has been the managing director of "Innovation Network Austria GmbH", which is the service company of the "Association of Austrian Technology Centres". As an industrial partner he has been involved as a key individual with several European Union Projects: ESPRIT Project 3701: SMArTMAN SME (Supply-Chain Management Tools for Machinery Manufacturing SME's), Project "SALESMAN", and, Project "eMMEDIATE". Furthermore, he is a registered project reviewer for the European Commission, publishes his own Innovation Journal: "Innovation Spirit", and manages the Innovation Platform www.inna.at.

Dorothee Frielingsdorf studied Industrial Engineering at the Technical University of Karlsruhe, Germany, where she graduated as Dipl. Wirt.-Ing in 1997 (equivalent to an MSc). During her studies she worked for the Fraunhofer Institute for Systems and Innovation research (ISI) in Karlsruhe and for the Prognos AG in Basel, Switzerland, working on industrial and policy consulting projects. At the End of 1997 Dorothee joined the University of Stuttgart, and subsequently the Fraunhofer Institute for Industrial Engineering (IAO) in the beginning of 2000. Since then, she has been working on various industrial consulting and research projects in the business development, innovation management and corporate learning domains. From the beginning of 2002 she worked as a technical project manager on the RODEO project.

After basic training in counselling and occupational psychology, **Sibylle Heunert** specialized in group dynamics, and individual and team coaching. She has been active in teaching and research in academia, in addition to creating and managing her own company. Throughout these ventures Sibylle has started various professional networks, including networks for coaches and psychologists. This has contributed to enabling her to build a bridge between theory and practice.

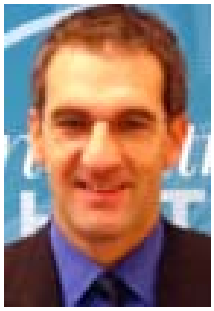
Patrick Klein is a Researcher in the division of Cooperative Product and Service Engineering at the Bremen Institute of Industrial Technology and Applied Work Science at the University of Bremen (BIBA), Germany. His research areas and interest include: Integrated product and process models in the product development process; Product Data Management; Knowledge Management; and organisational methods design.

Dr Fiona Lettice is a senior lecturer at Cranfield University. She is active in European Commission and EPSRC funded research projects in the areas of discontinuous innovation, knowledge management, project/programme management, complexity theory, and innovation in regional clusters. A key theme in these projects is how organisations improve their innovation performance and on providing tools and techniques to support them. Prior to her academic career, Fiona worked in industry as a Project Manager within Centrica's Business Development directorate, and for BMW/Rover Group in design and engineering projects. In her work with teams, Fiona uses graphic facilitation as a way to encourage dialogue and communication between different disciplines and organisations.

Menno Marien originally Dutch, studied business science at the Rotterdam school of management, fascinated by innovation, creativity and its management. After two years of work in a Dutch consultancy, he decided to move to Barcelona where he worked as a freelance consultant in various companies, leading European and innovation strategy projects. Four years ago he entered CDN, where he created the Applied Innovation area, in which product innovation strategies are defined and materialised into products. As well as being Innovation Manager, Menno has a passion for playing the saxophone, and for being with his 3 year-old daughter Anoushka.

Margarida Monteiro de Barros was born in Portugal and studied Design between Lisbon and Milan. It was a case of 'love at first sight' between her and CDN, and both are still in love after 4 years of exciting work together. After starting in the Product Development area, Margarida moved to the Applied Innovation area where she currently manages product strategy and product definition projects. Furthermore, she is in charge of developing methodologies and tools for the area, as well as training other CDN collaborators in the Applied Innovation methodology. She is CDN's project manager on the RODEO project.

Born in Bari (Italy) in 1965, and a graduate in Computer Science, **Silverio Petruzzellis** worked for ten years as a software architect for Softmedia, a software development company mainly involved in linguistic educational software programs. He joined Gruppo Formula in 1997 where he contributed to the set up of the Customer Care information system. Microsoft Certified Professional from 1998, he was in charge of the design and development of the Cézanne® Competency Planning software module from June 1998. As the Cézanne® Software Development Team leader from June 1999 to June 2000, he developed a deep knowledge of object oriented development and was part of the Gruppo Formula team directly involved in OMG activities. Following the spin off of Cézanne® Software by Gruppo Formula in October 2000, he has been the Cézanne® Competency Planning Project leader. From September 2002 he joined the Product Management Team and he is now in charge of the Product Envisioning process. He is also taking part in many research projects involving Cézanne Software, such as LORE, EKMF, and RODEO.



Jean-Baptiste Piemontesi is a director of HOTELA, a Swiss social insurance provider. He is in charge of social insurance products, strategy, know-how and vocational training. After an apprenticeship in business, he decided to work for HOTELA and to pursue a varied career within the company. Before entering the company's General Management he acquired robust experience in the Social Security field, managing teams and many projects. Impassioned by the complexity of human resources and curious to find the best options for the development of employees, he a strong interest in competency transfer methods and organisational forms.

Jörg Roth is a qualified auditor and family member of Hoffmann GmbH, a supplier in the automotive industry.

Arturo Soto was born in Valladolid in 1968. He trained to be a Mechanical Engineer at Valladolid University and graduated in 1994, following which he started working in CIDAUT in 1995, as a member of the CAE team. When CIDAUT started its activities in the Passive Safety area, he was took charge of their Accident Reconstruction project. In February 1997 Arturo moved to Grupo Antolin Ingenieria as a Computer Simulation area manager within the Research Department. This department has since expanded its activities, and now covers all Safety (Active and Passive) issues related to the Grupo Antolin portfolio. He is a specialist in Passive Safety issues related to automotive upper trim parts. As a member of the Research Department, Arturo has also been involved in other research projects, including RODEO, for the last two years.

Vicenç Vidal Falguera studied graphic design at ELISAVA and graduated in advertising information sciences from the "Universitat Autònoma de Barcelona". Heading up the Graphic Design department at CDN, Spain, Vincenç is an expert in graphic product application, gathering required product information to ensure its intuitive usability by means of pictograms, colours, tags and functional decoration. The diversity of the product sectors that CDN works with provides great motivation and justifies his long stay, in addition to the constant challenge to apply his knowledge and explore his personal interests. On the RODEO project Vincenç has made significant contributions in the development of tools and templates with sophisticated graphic content.

Memories in Pictures

The RODEO Project (April 2002 to December 2004)

Exploration / Exploitation Workshop: Fiona Lettice on the job, in Fribourg (Switzerland, February 2003).

Barcelona work meeting – deciding on the RODEO tools - September 2003: Margarida Monteiro de Barros, Arturo Soto, and Sibylle Heunert. People named from left to right.

Saim Cicek, Patrick Klein, Silverio Petruzzellis, and Carol Webb – on the spot sense-making (Barcelona, September 2003).

Taking a vote: Liza Wohlfart, Carol Webb, Margarida Monteiro de Barros (Barcelona, September 2003).

RODEO Review, European Commission, Brussels, November 2003: Silverio Petruzzellis, Margarida Monteiro de Barros, Liza Wohlfart, Ron Dvir, Fiona Lettice, Laurent Brouyere.

Working meeting, Burgos, Spain, February 2004: Joerg Roth, Liza Wohlfart, Fiona Lettice, Laurent Brouyere, Atai Ziv.

RODEO deliverable 2: Laura Stella Louise Wunram, born 13th March 2004.

RODEO Process Starter Kit workshop: Sibylle Heunert (facilitator). Front row, starting from right: Christoph Meier, Laurent Brouyere, Noemi Wuerzner. Back row, starting from right: Marc Boillat, Marie Bornet, Jesus Perez, Joanna Wuersch, Nathalie Bersier, Gilles Chevrey (Montreux, Switzerland, March 2004).

RODEO Process Context Analysis developers and facilitators: Alex Bading and Liza Wohlfart, in workshop with Swiss SMEs (Montreux, March 2004).

RODEO Process Context Analysis workshop: Sven Schimpf (facilitator), Sibylle Heunert, Jesus Peres, Jean-Baptiste Piemontesi, Marie Bornet (Montreux, March 2004).

RODEO Expert Validation Workshop, Cranfield University, June 7, 2004:

Complex debate!

Dr Fiona Lettice, with her students Carol Webb and the brand new Dr Karen Young, on graduation day at Cranfield University (June 11, 2004).

Enjoying the view: Michael Wunram, Saim Cicek, Margarida Monteiro de Barros, Sibylle Heunert, Atai Ziv, Joerg Roth, Franz Filzmoser, Liza Wohlfart (Switzerland, July 2004).

Lunchtime on Lake Geneva, Montreux (Switzerland, July 2004). From back to front: Atai Ziv, Liza Wohlfart, Franz Filzmoser, Carol Webb, Margarida Monteiro de Barros, Silverio Petruzzellis, and Saim Cicek standing on the stones.

RODEO deliverable 3: Ben Lettice, born 28 August, 2004.

Arturo Soto and Carol Webb, writing case study 5 (Italy, October 2004).

Patrick Klein and Michael Wunram (Italy, October 2004) – in a pizza restaurant, laughing at an entertainer we referred to as the ‘cho-cho’ man.

The ‘cho-cho’ man – named so on account of his favourite phrase: “cho cho, cho, ….. cho, cho, cho…. Cho… CHO!” (Italy, October 2004).

In front of the Trulli houses: Arturo Soto, Liza Wohlfart, Margarida Monteiro de Barros, and Laurent Brouyere (Italy, October 2004).

On the streets of Locorotondo: Laurent Brouyere, Liza Wohlfart, Silverio and daughter, Sveva, Petruzzellis (Italy, October 2004).

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APPENDIX 1

Complexity Experience Game Instructions

Give these instructions on cards, one to each player in the complexity Experience Game in the Starter Kit.

Card	Instruction 1	Instruction 2	Instruction 3	Instruction 4
1.	Avoid other people	Try to sit down	Try to write a letter	Free Choice: Do something you want to do that doesn't negate your other instructions
2.	Try to find a partner to help you	Move chairs from the reach of others – don't let anyone sit down	Try to make everybody sing a song	Free Choice: Do something you want to do that doesn't negate your other instructions
3.	Walk around and touch everyone once	Offer help to someone without speaking	Keep Quiet – if other people make a noise, tell them to "shhh"	Free Choice: Do something you want to do that doesn't negate your other instructions
4.	Try to form a group of 4	Go to the middle of the room	You and those in your group of 4 should say the alphabet	Free Choice: Do something you want to do that doesn't negate your other instructions
5.	Go to where the majority of people are	Try to get as many others as possible to join you	Try to make other's laugh	Free Choice: Do something you want to do that doesn't negate your other instructions
6.	Follow someone	Do what they do	Keep smiling	Free Choice: Do something you want to do that doesn't negate your other instructions

7.	Stand in a corner	Pretend to cry	Don't let anyone help you – ignore everyone	Free Choice: Do something you want to do that doesn't negate your other instructions
8.	Choose two people you want to introduce to each other	Try to introduce them to each other	Ask them to find out as much about each other as possible	Free Choice: Do something you want to do that doesn't negate your other instructions
9.	Ask everyone their name individually and write it down on a piece of paper	Move around the room and make sure everyone sees the completed list	Try to sit down	Free Choice: Do something you want to do that doesn't negate your other instructions
10.	Find something to read	Read it out so that everyone can hear	Find something else to read, and repeat instruction 2.	Free Choice: Do something you want to do that doesn't negate your other instructions
11.	Telephone someone and start a conversation	Try to find out what they did last weekend and what they are doing this weekend, and if they have any holiday plans this year	Move around the room and tell different people about what your friend did, will do, etc.	Free Choice: Do something you want to do that doesn't negate your other instructions
12.	Find someone in the room who has been to London	Find out when, how long for, who with, etc.	Find someone in the room who has been to New York, and repeat instruction 2.	Free Choice: Do something you want to do that doesn't negate your other instructions
13.	Avoid other people	Go to the middle of the room	Close your eyes and keep silent	Free Choice: Do something you want to do that doesn't negate your

				other instructions
14.	Look for people who try to sit down	Make them stand up	Keep silent	Free Choice: Do something you want to do that doesn't negate your other instructions
15.	Look for people who are reading	Make them stop	Keep silent	Free Choice: Do something you want to do that doesn't negate your other instructions
16.	Look for people who are avoiding others	Try and integrate them with the rest of the group	Ask them what is wrong and how you can help them	Free Choice: Do something you want to do that doesn't negate your other instructions
17.	Try to be different	Stay with the majority of people	Keep talking	Free Choice: Do something you want to do that doesn't negate your other instructions
18.	Make a 'to do' list of things you want to do in this exercise	Try to do the things on your list	If necessary, try and involve someone else to help you do what is on your list	Free Choice: Do something you want to do that doesn't negate your other instructions
19.	Look for people who are writing	Make them stop	Make them sit in a corner and do nothing	Free Choice: Do something you want to do that doesn't negate your other instructions
20.	Observe the group	If any groups or partnerships start to form, try and break them up	Keep silent	Free Choice: Do something you want to do that doesn't negate your other

				instructions
21.	Observe the group	If anyone tries to split groups or partnerships, try to stop him/her from doing so	Ask these people why they are trying to split others up	Free Choice: Do something you want to do that doesn't negate your other instructions
22.	Observe the group	If arguments start, try and mediate	Keep the peace	Free Choice: Do something you want to do that doesn't negate your other instructions
23.	Make a 'to do' list of things you want to do in this exercise	Try to do the things on your list	If necessary, try and involve someone else to help you do what is on your list	Free Choice: Do something you want to do that doesn't negate your other instructions
24.	Make a 'to do' list of things you want to do in this exercise	Try to do the things on your list	If necessary, try and involve someone else to help you do what is on your list	Free Choice: Do something you want to do that doesn't negate your other instructions
25.	Make a 'to do' list of things you want to do in this exercise	Try to do the things on your list	If necessary, try and involve someone else to help you do what is on your list	Free Choice: Do something you want to do that doesn't negate your other instructions

APPENDIX 2

Monitoring Individual Achievements While using the RODEO Process

The following is a questionnaire that can be given to users of the RODEO Process after they take part in each of the three modules. It will help them monitor their own achievements and learning curve.

Measuring the Progress of the RODEO Initiative

After the Starter Kit

1) "I can see more perspectives of my organisation than I could before and I can see how these complexity principles apply to real life"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

2) "I am curious to learn how to apply these ideas in real life and working situations"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

3) "I feel that this learning is very interesting and it could be helpful for me"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

4) "I can see now that relationships are important"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

5) "I learned about the powerful influence of the individual in group situations"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

6) "I see the importance of the self-confidence of individuals now"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

7) "I have learned that you never know what will emerge"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

8) "I have learned how to make sense of emergence"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

9) Other observations, ideas and emergent objectives:

After the Context Analysis Kit

1) "I can see more perspectives of my organisation than I could before"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

2) "My understanding of situations and problems is better now"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

3) "My ability to find solutions to problems has increased"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

4) "I have learned that space for time and experimentation is needed"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

5) "I know what an organisation needs to survive and grow and adapt now"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

6) "I feel able to put these new ideas into practice"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

7) "I am more confident in dealing with difficult situations now"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

8) "I see individual and organisational strengths in our company (and others) more clearly"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

9) "I will be able to identify emerging opportunities more easily now"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

10) "The company strategy makes more sense to me now in terms of a bigger picture"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

11) Other observations, ideas and emergent objectives:

After the Tool Guide

1) "My ability to find solutions to problems has increased"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

2) "I feel able to put these new ideas into practice"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

3) "My ability to look for emerging opportunities has been increased"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

4) "I have learned how to identify and find tools based on complexity principles"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

5) "I now know how to evaluate our company's tools from a complexity perspective"

☐1------☐2------☐3------☐4------☐5
strongly disagree strongly agree

6) Other observations, ideas and emergent objectives: