
HOW TO USE COMPLEXITY AND UNCERTAINTY FOR NEW BUSINESS?

■ **Abstract:**

This article is structured in the following way. The first part describes the idea of reflexive modernization as espoused by Beck and suggests some broad areas where the theory may illuminate activities in the economy. The second part describes complexity and uncertainty as main aspects of the new modernity. The third section offers some thoughts, how organizations can make business in such environment.

■ **Keywords:**

Complexity, Uncertainty, Reflexive Modernization, Management, SME

■ **MODERNIZATION, POST-MODERNIZATION AND
REFLEXIVE MODERNIZATION**

Bell (1973) outlined the three stages of the development of the human society: pre-industrial (agrarian), industrial and post-industrial society. Modernization was the term to explain the transformation from agricultural society to an industrial society. According to HE (2004:3) the passing of Classical Modernization Theory (CMT) was described by several authors: Modernizing the Middle East (Lerner 1958), Politics of Modernization (Apter 1965), Modernization: Protest and Change (Eisenstadt 1966), Modernization: The Dynamics of Growth (Weiner 1966), Modernization and the Structure of Society (Levy 1966), The Dynamics of Modernization (Black 1966), The Stages of Economic Growth (Rostow 1960), Political Order in Changing Society (Huntington 1968). Some aspects of this kind of modernization are rational expectations and rational decision-making models. Management theories for example are focused on reducing complexity (Bandte 2007), managing risks and organizations are seen as machines (metaphor). This mechanical approach is focused on technical

sciences and rational expertise. In this system customers are seen as homo oeconomicus and employees and supplier can be substituted by any other person/organization. Management models like Quality Management (DIN 2000), Total Quality Management (Zink 2004), Lean Production and Lean Management (Womack/Jones/ Roos 1994), Business Reengineering (Hammer/Champy 1994) and Kaizen (Imai 1992) are traditionally grounded on Scientific Management (Taylor 1911). In this context Taleb (2007:275-276) is wondering, that students and businessmen all over the world are focused on "scientific methods, all grounded in the Gaussian" and he believes, that "people want a number to be anchored on".

Postmodernism tried to sketch the culture situation in the post-modern, which are very different from the classical modernization. La Condition Postmoderne (Lyotard 1979) is a very popular book on the post-modern issues. In this Knowledge Society (Stehr 1994) and Knowledge Economy (Rodrigues 2002, Soete 2006) knowledge-based organization (Drucker 1996) new management models appeared like Learning Organization (Senge 1990, 1992, 2000),

Knowledge Management (CEN/ISSS 2004, Heisig 2005, Mertins et al. 2005, Nonaka/Takeuchi 1995/1997, Pobst et al. 1998). Drucker (1959) coined the term Knowledge-worker to differentiate work in industrial settings from work in knowledge-based organizations. But in practice autonomy and external contacts - integral components of the new knowledge work - continue to be limited or non-existent in many workplaces (May/Korczynski/Frenkel 2002). Dankbaar/Vissers (2009:3) argue, that „the expected growth in the share of knowledge work may be less than expected: along with the forces pushing for an increase in knowledge work, there are also forces counteracting these.“ Moldasch (2010) brings forward the argument, that the dichotomy of knowledge work vs. industrial work isn't helpful to characterize work in modern organizations. So post-modernism comes under criticism on organizational level and as a social theory (Abicht 2010). This post modern approach was extended by several authors: Ecological Modernization (Huber 1985), Reflexive Modernization (Beck 1986), the Modernization of Modern Society (Zapf 1991), the New Modernization (Tiryakian 1991, Alexander 1995), the Multiple Modernities (Eisenstadt 1992, 1998) etc. In this paper, we will have a closer look on Second Modernization or Reflexive Modernization Theory (Beck/Giddens/Lash 1994).

Beck's Risk Society (Beck 1986/2008) was a critique on the post-modern society and Beck/Bonß/Lau (2003). Argue, that modernists and postmodernists are interested in deconstruction without reconstruction, second modernity is about deconstruction and reconstruction. Second modernity (Reflexive Modernization) is therefore different to modernization and postmodernism. What is new is that modernity has begun to modernize its own foundations. Where postmodernism simply celebrates this multiplication of boundaries, the theory of second modernity starts with the problem this new reality poses for individual and collective decisions, and with the problem that the continued existence of such decisions poses for theory. Institutions that are capable of such conscious boundary drawing are enabled in a way that those of the first modernity were not. A good example is the financial sector, where it is very common to use mathematical models, risk management systems, business intelligence,

simulations etc. But as we know from the last two years, financial crisis emerged anyway. So, what happened? Some researchers said, that mathematical and analytical models should be improved (Welp 2009), but Phelps (2009) assumed, that the crisis is based on uncertainty (Knight 1921). "Uncertainty, as Keynes knew, is not the same as risk, or probability: risks can be calculated, uncertainty escapes calculation" (Mitchell/Streek 2009:6). So complexity and uncertainty increase in Reflexive Modernization and it involves far-reaching and deep changes to national, regional, and international institutions of economic, social, cultural, and political governance (SFB 2008). Reflexive Modernization is a social theory grounded on three theorems (Böhle/Wehrich 2009:10; Bonß 2009): Risk Society, forced Individualization, multidimensional globalization and with several interdependencies (Beck/Grande (2004:50).

■ COMPLEXITY AND UNCERTAINTY

"The social world, like most of the biological world and a good part of even the physical world, is populated by highly contingent, context-sensitive, emergent complex systems. Understanding these features of complexity requires an expansion of our paradigm of science itself" (Mitchell/Streek 2009:4). Complexity and historicity mean above all that human action inevitably takes place in the face of an uncertain future (Reflexive Modernization). Haken (2006:1-7) characterizes complex systems like this: "In a naive way, we may describe them as systems which are composed of many parts, or elements, or components which may be the same or of different kinds. The components or parts may be connected in a more or less complicated fashion. Systems may not only be complex as a result of being composed of so many parts but we may also speak of complex behaviour. The various manifestations of human behaviour may be very complex as is studied e.g. in psychology (...) An important step in treating complex systems consists in establishing relations between various macroscopic quantities. These relations are a consequence of microscopic events which, however, are often unknown or only partially known". In business organization its about complex/uncertain problem solving for customer. "Complex Problem Solving (CPS) occurs to overcome barriers between a given state and a desired goal

state by means of behavioural and/or cognitive, multistep activities. The given state, goal state, and barriers between given state and goal state are complex, change dynamically during problem solving, and are intransparent. The exact properties of the given state, goal state, and barriers are unknown to the solver at the outset. CPS implies the efficient interaction between a solver and the situational requirements of the task, and involves a solver's cognitive, emotional, personal, and social abilities and knowledge" (Frensch/Funke 1995:18). Therefore knowledge must be applicable to different, new, and complex situations and contexts.

■ **SECOND MODERNITY BUSINESS**

So the question is: How to manage an organization through complexity and uncertainty (Baecker 1999:170)? It is against this background that the concept of Multiple Competencies (Rauner 2004, Freund 2008, 2009; Freund/Tsigkas 2007) has attracted increased research attention. Competencies are conceptualized as complex ability constructs that are context-specific (Koeppen et al. 2008:61) but the concept of Multiple Competencies (Freund 2009) broadened Competency Management for social and reflexive environments to solve the problem of missing synchronization on individual, team and organizational level (Figure 1).

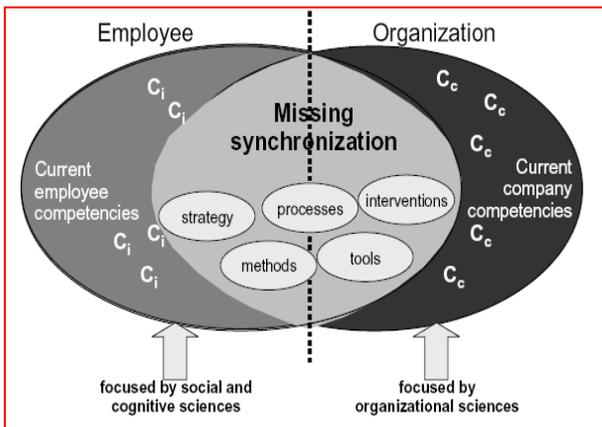


Figure 1: Missing synchronization (Reinhardt/North 2003:1373)

Reflexive Modernizations points on secondary-effects of industrial production. A simple example for this are cars, because it's the production of cars which is a big problem for climate change and other problems. This may

remind one of John Ruskin's lament, put forward one and a half centuries ago: "We pour our whole masculine energy into the false business of money-making" (Ruskin 1865:88). Well, private firms always have to "make money", but that is not their business. "Organizations are in the business of solving customer problems, be they individual needs such as nutrition, health or locomotion, or the social and ecological problems faced by our world. These kinds of functions and purposes bestow upon organizations their very raison d'être" (Schwaninger 2006:78). To make business in a social, complex and uncertain environment is difficult, because economists and sociologists each hold half of the truth, „so to speak, when it comes to markets, it seems natural that they should try to coordinate their efforts" (Swedberg 2003:15). According to Economic Sociology (Smelser/Swedberg 1994, Swedberg 2008) capitalism follow the interest of shareholder and sociology follow the interest of social communities. We should follow the interests of both. Follow the interests! (Swedberg 2003:49) of Economic Sociology.

- Sociology of production:
- Sociology of consumption
- Sociology of profit

May be new business models like the Mass Customization (Pine 1993) or Open Innovation (Chesbrough 2003, von Hippel 2005, Daniel/Piller 2010) are able to support the idea of Economic Sociology.

■ **CONCLUSION**

Reflexive Modernization is different to modernization or post-modernization. It is argued, that scientific management or post-modern management models like knowledge management will not solve the problem of secondary-effects. To solve complex customer problems in an uncertain environment, dispositions of selforganization (multiple competencies) are necessary. The concept of Multiple Competencies is able to synchronize multiple competencies on individual, team and organizational level. According to Swedberg, business should follow the interest of social communities and shareholder. Further research: More and more business models should be reinvestigated from the reflexive modernization point of view.

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