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**Managing Complexity – Lessons from Peter Drucker and Niklas Luhmann**

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Complexity is one of the most intriguing discoveries of scientific discourse in the twentieth century, remarks the sociologist Dirk Baecker.<sup>1</sup> Dealing with complexity is also for management theory and practice an emerging issue. What is complexity? How is it defined? The use of the term complex is often confused with the term complicated. Complicated means that experts can keep track of the phenomenon because logical relations exist between the elements. Complexity is different and is not transparent. Complexity may be measured by rendering the number of heterogeneous elements, the number of potential relations between these elements, and the variation of these relations based on context and time.

Let us demonstrate complexity with an example. Chess is undoubtedly a complex game. In a typical chess position there is an order of permitted moves. A typical game lasts about 40 moves until one party concedes. The complexity of chess is shown by the Shannon number,  $10^{120}$ . It is an estimated lower bound on the game tree complexity of chess, calculated using information theorist Claude E. Shannon presented as an aside in his 1950 paper "Programming a Computer for Playing Chess". The game tree size  $10^{120}$  is the total number of possible games that can be played. As a comparison it is often compared to the number of atoms in the universe. The observable universe contains about  $3$  to  $7 \times 10^{22}$  stars organized in more than 80 billion galaxies. Calculations give the number of atoms in the observable universe to be around  $10^{80}$ .<sup>2</sup>

Under these circumstances, what could be the strategic plan of a chess grand master? Precalculating their own maneuvers or those of the opponent? Neither. Eric Leifer, an

American sociologist, asked chess grand masters how many maneuvers they precalculate. The answer was none to one maneuver. The key strategy of chess grand masters is designing a game situation which offers richness and complexity on the chess arena. They build up their game as do their opponents. Leifer asked for the reason for this strategy and got the answer that that it is the only way to correct mistakes from the beginning of the game. If you build up the game, you finally find a maneuver that breaks any resistance and puts the opponent out of action.<sup>3</sup>

The classical way of dealing with complexity is analysing, precalculating, and trying to understand the elements and their relations. From chess grand masters we can learn that it is not the players' strategies that determine the game but the players' development or game evolution. Leifer remarks, "an ex ante framework will be useless, as evaluations and strategies are in continuous flux."<sup>4</sup>

How do leadership-masters deal with complexity? Organizations are as complex as chess because they are social systems acting in an unexpectable environment. Most start as one entrepreneur but then they grow, and growth means more than changing size.

Organizations become complex. And here, for the last 200 years, a new social function has appeared. Peter Drucker noticed, "Management becomes necessary when an organization reaches a certain size and complexity."<sup>5</sup>

Organizations and management act in a complex world and have to deal with paradoxes. Organizations, managers, and management consultants have to deal with complexity and reduce it. Every organization and every manager tries to reduce complexity and has to focus on "simple" and understandable products or services. That is the job of managers and the origin of success of organizations in an age where almost all decisions in society are made in organizations. Modernity means deflecting decisions in organizations, organizations that are built on reducing complexity. And millions of organizations all over

the world reducing their specific view of the environment create a world more complex than ever before. On the other hand customers like simple, clear, expectable, and individual services and products. Customers are not attracted by complexity. They prefer organizations which show trust and offer a face-to-face relationship. In the 21<sup>st</sup> century, an age of complexity and knowledge, managers have to find new solutions for paradoxical phenomena and cannot manage in the traditional way.

W. Ross Ashby, co-developer of cybernetics, remarks that if a system is to be stable, the number of states its control mechanism has must be greater than or equal to the number of states in the system controlled. Ashby describes the law as “only variety can destroy variety”.<sup>6</sup> If you have to solve complex problems, the operating system has to be as complex and has to have as much variety as the operated system. Complexity can be handled only by complexity.

Niklas Luhmann, the German sociologist and systems theorist, points out that a system operates by selecting only a limited amount from all the information available outside. He calls this process “reduction of complexity.” Each system has a distinctive identity that is constantly reproduced in its communication and is based on what is considered meaningful and what is not. Luhmann called this process of reproduction from elements previously filtered from a complex environment “autopoiesis” (literally: self-creation). Social systems are *autopoietically closed* in that they use and rely on resources from their environment. In modern society, outside the subsystems, environment multiplies in complexity and management’s task is to be open for it. How can managers cope with the inconsistency of routine and innovation?

Peter Drucker, the grandfather of management, was one of the most brilliant observers, analysts and consultants in dealing with complexity in organizations. Hiroyasu Isaka asked Atsuo Ueda who Peter Drucker was “Drucker calls himself a social ecologist. Ecology is to

observe things.”<sup>7</sup> Ueda points out that Drucker was a unique observer. He dealt with complexity with a few simple rules. He analyzed history, had an extensive network of contacts and saw links where no one had seen them. He posed seemingly simple questions such as “who is our customer?” or “what are our results?” and made management and organizations more complex through these questions. The key of Drucker’s success is communication. He not only tried to *understand* the complexity in the organizations he observed but communicated with it. In everyday life we, as workers, managers, consultants, scientists or journalists, have the illusion that everything is under control. Thus the human consciousness is not able to understand complex phenomena consisting of more than three or four organized, heterogeneous elements.

Peter Drucker communicated for sixty years with hospitals, churches, businesses and universities. He observed their behaviour and change. His focus was communicating with complex phenomena like organizations. Drucker was an excellent observer, who communicated with the key-observer of the organization, the manager. Drucker communicated with the manager, whose role is the social function at the boundary of organization and environment. Drucker’s research was based on constructivist access, even when he saw himself beyond constructivism. He was an observer who observed observers of social systems. He was a management innovator and had a huge influence worldwide. His questions and injunctions changed management thinking in practice. Today in management we all live in a “Peter Drucker’s World”.<sup>8</sup>

Most of his thinking and philosophy has percolated into the theory and practice of management without being quoted. In most industrial countries the majority of businesspeople know his name and some of his terms, but most of them work unaware of his philosophy. If I discuss with, for example, non-profit-managers in Germany almost no one knows Peter Drucker, though a lot of them use Drucker’s terms without being aware of the origin of this thinking.

Heinz von Foerster, another developer of cybernetics, remarked in his inimitable way that you can define a manager as someone who can manipulate how he is observed. Peter Drucker was aware of this elaborate and indirect interaction. He was quite aware that his encyclopedic knowledge, his influence on managers and his socratic style was one side of the coin. The other was that Drucker worked his whole life with the resource of nescience. The awareness of nescience is inherent to all master thinkers and brings professional competence to perfection.

"Who knows his nescience is exalted, but who perceives it for knowledge is in agony." In Foerster's sense we can see Peter Drucker as a management philosopher and writer who was aware that everybody observed him. My former boss, Tom Peters, a major competitor to Peter Drucker in drawing the attention of the managerial masses, had a hard time with Drucker's long-term success. Peter Drucker managed the complexity of changing the management milieu worldwide conscious of how he was observed. His philosophy was based on communication with his milieu, with management – just as the Greek Socrates was a man of the word whose wisdom emerged from discussions with the citizens at the Agora, the old downtown Athens. Drucker was the main hub in the management milieu and other management hubs observed him. They noted his wide encyclopedic knowledge, his modesty, his integrity and his philanthropy. They read his books, discussed with him and saw in face-to-face contact with him that this man, his thinking, and his life was coherent. His disciples identified Drucker's rich life and his openness with every kind of management task as the key source to oscillating between reducing complexity and increasing it. Peter Drucker's excellence was based on balancing experiences with expectations and adjusting his expectations.

It is an irony of fate that a lot of managers and consultants with a "simplify"-approach quote Peter Drucker and see him as their godfather. They just see the one side of his philosophy. Drucker is quoted as giving advice to multinationals in disintegrating and giving up the

classical strategy of maximal integration. He is quoted on self-management on focusing on one or two issues. Drucker is quoted, "What you have to do and the way you have to do it is incredibly simple. Whether you are willing to do it is another matter." I like these injunctions too, and I work with them personally. But we all know that the opposite advice can be true in specific situations. In one of his last books Drucker pointed out, "My final word on how to use this book: Please don't rush through it at the last minute. The five questions appear simple, but they are not. Give them time to sink in; wrestle with them."<sup>9</sup> Herbert Simon, the great-grandfather of management, wrote in 1946 concerning management principles: "For almost every principle one can find an equally plausible and acceptable contradictory principle."<sup>10</sup> Now, in the 21<sup>st</sup> century, we have to deal with this.

Peter Drucker discovered in his philosophy and life a way to tolerate the paradoxes of everyday life in organizations and management. He helped to reduce complexity and to increase it. Drucker took trouble to test every of his ideas and concepts to see if they worked. His disciples confirmed that he tried to use only words and terms every manager could understand without needing a dictionary. Drucker's books and speeches were intended to be linked directly to the practice of management. Economic scientists ignored him a long time and still do because of his inductive approach.

Every time we ask managers what makes their lives more complicated, the list seems to get longer. Peter Drucker helps managers to widen their view and to trust themselves. He helps them to define management as a liberal art and a communication system where observers observe how they are observed. Drucker encourages managers to vary their actions and to adjust their expectations in permanent self-assessment, the "first action requirement of leadership: the constant resharpener, constant refocusing, never being really satisfied."<sup>11</sup> Drucker helps us to deal with complexity in a *non*-strategic manner. We do not have to analyse everything and spend much time on long-term planning. We can

only solve the problems of today. Drucker teaches us to look behind simple cause-and-effect chains and shows us the blind alleys we are running in. <sup>12</sup>

Like chess grand masters, professional managers develop a rich and complex communication stage where observations are ambivalent. They are innovators in finding and bridging gaps where others see only labyrinths. People of the “next society” (Peter Drucker) are fascinated and challenged by complexity, they “act always as to increase the number of choices.”<sup>13</sup> (Heinz von Foerster)

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He is professor of social sciences and management at Mannheim University of Applied Sciences, is in the process of founding the Mannheim Institute of Applied Management Research based on Peter Drucker’s thinking and is researching on complex and innovative organizations (such as the Toyota Production System) at the Competence Center for Modern Production Systems, Mannheim. He was a manager and management consultant (e.g. Tom Peters Group) and is a disciple of Niklas Luhmann and Dirk Baecker, who influenced systems theory and management as a social function and a liberal art. He manages the website [www.managementdenker.com](http://www.managementdenker.com) and asserts that Peter Drucker is the most influential management thinker in German speaking countries.

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<sup>1</sup> Dirk Baecker, Complexity, in: Routledge Enzyklopedia of Social Theory, London, 2006

<sup>2</sup> Claude E. Shannon, Programming a Computer for Playing Chess, in: Philosophical Magazine, 41 (314), 1950

<sup>3</sup> Eric Leifer, Actors as Observers, New York, 1991

<sup>4</sup> *ibid.*, p. 26; compare Dirk Baecker, Coaching Complexity - 1. Berliner Coachingtag, Berlin 03.03.2006

<sup>5</sup> Peter Drucker, Management, Rev. edition with Joseph A. Maciariello, New York, 2008, p. 3

<sup>6</sup> W.R. Ashby, Introduction to Cybernetics, Chapman & Hall, 1956, p. 207

<sup>7</sup> Atsuo Ueda, An Introduction to Peter F. Drucker, Eight Faces, interview by Hiroyasu Isaka, Weekly Toyo-keizai, 2001, 06.09.

<sup>8</sup> compare Mark Gimein, Now that we live in a Tom Peters’ World ... Has Tom Peters gone crazy?, Fortune, 2000, Nov. 13<sup>th</sup>

<sup>9</sup> Peter Drucker with Jim Collins et al., The Five Most Important Questions You Will Ever Ask About Your Organization, San Francisco, 3<sup>rd</sup> ed., 2008, p. 84

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<sup>10</sup> Herbert A. Simon, The Proverbs of Administration, in: Public Administration Review 6, 1946, S. 53-67

<sup>11</sup> Peter Drucker with Jim Collins et al., *ibid.*, p. 5

<sup>12</sup> Winfried Weber, *Complicate your life*, Goettingen, 2007

<sup>13</sup> Heinz von Foerster, Bernhard Poerksen, *Understanding Systems. Conversations on Epistemology and Ethics*, Heidelberg/New York, 2003