**13th Scientific Conference on
INDUSTRIAL SYSTEMS**

IS '05

in Herceg Novi, Montenegro
September 7-9, 2005

Change Management for Mass Customization –
Changing minds through representational redescription

Robert Freund, M.A.
Finkenweg 6
D-35099 Burgwald
Germany
Tel.: +49 6451 71290
Fax: +49 6451 71291
info@robertfreund.de
www.RobertFreund.de

Abstract

Organizational forms suitable for mass production are decidedly unsuitable for Mass Customization. When a company enters the new frontier and begins mass-customizing it´s products and services, it´s organization begins to change. But we have to change more than products, their representations or processes to get into Mass Customization Business. There is a need for new thinking, for new ways of solving problems and a strong demand for internal change management – an issue not discussed in the Mass Customization literature before. A possibility for achieving this targets offers the Theory of Multiple Intelligences of Gardner

1. Mass Customization and Personalization

The idea of mass customization is based on the observation that there is a customer interest in products that are adapted to his/her individual needs and preferences, since the adaptation will increase perceived performance. As the standard of living has increased in the last 50 years, individualization has received increased focus, since customization has come within reach of the average consumer. At the same time there has been a massive development of technologies (Svenson/Jensen 2001:1).

The concept of mass customization was first identified in "Future shock" by Toffler (1971) and was later described in "Future perfect" by Davis (1987).

Stan Davis, who coined the phrase in 1987, refers to mass customization when "the same large number of customers can be reached as in mass markets of the industrial economy, and simultaneously they can be treated individually as in the customized markets of pre-industrial economies" (Davis 1987:169). In order to address the implementation issues of mass customization, Tseng and Jiao (2001) provide a working definition of mass customization that is very useful. The objective of mass customization is "to deliver goods and services that meet individual customers´ needs with near mass production efficiency" (Piller 2003).
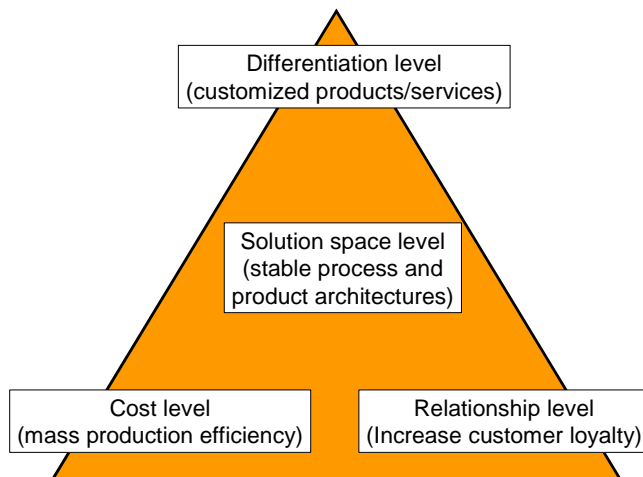

Figure 1: The four levels of mass customization (Piller/Stotko 2003:61)

Doing so, mass customization is performed on four levels (Figure 1). While the differentiation level of mass customization is based on the additional utility (value) customers gain from a product or service that corresponds better to their needs, the cost level demands that this can be done at total costs that will not lead to such a price increase that the customization process implies a switch of market segments. The information collected in the course of individualization serves to build up a lasting individual relationship with each customer and, thus, to increase customer loyalty (relationship level). While the first three levels have a customer centric perspective, a fourth level takes an internal view and relates to the fulfillment system of a mass

customizing firm: Mass customization operations are performed in a fixed solution space that represents (Piller 2003) "the pre-existing capability and degrees of freedom built into a given manufacturer's production system" (von Hippel 2001).

Personalization should therefore be clearly distinguished from customization. Both *customization* and *personalization* are based on the assumption that a homogeneous offering is not sufficient in meeting the customers needs (…). As defined by the Webster dictionary (2003), personalize means "to make something personal or individual; specifically: to mark as the property of a particular person" (Fung et. al. 2001:2). The definitions of *mass customization* and of *personalization* implies that the goal is to detect customers needs and then to fulfill these needs with an efficiency that almost equals that of mass production.

The new competition is a major upheaval that is affecting every aspect of how companies organize and operate. **The required shift in thinking is so great – and the danger of not making the transition is so serious** (Taylor 2004:18).

2. Change to get into Mass Customization Business

Organizational forms suitable for mass production are decidedly unsuitable for Mass Customization. When a company enters the new frontier and begins mass-customizing it´s products and services, it´s organization begins to change (Figure 2) (Pine 1993:213).
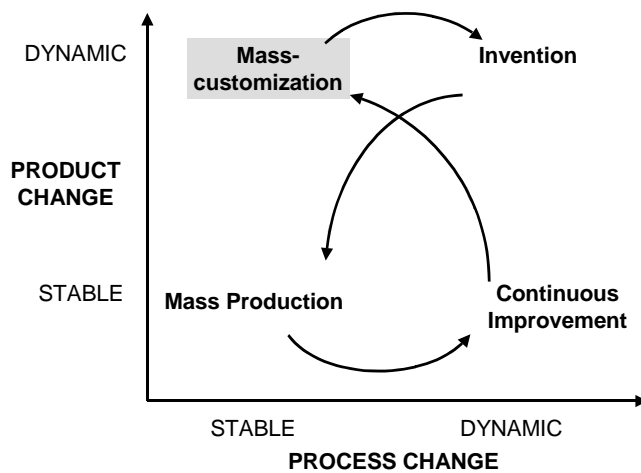

Figure 2: Product-Process-Change-Matrix (Pine 1993:218)

```
         ▲
HIGH     │ ┌─────────────┬─────────────┐
         │ │             │             │
         │ │ Transparent │ Collaborative│
         │ │             │             │
CHANGE IN│ ├─────────────┼─────────────┤
PRODUCT  │ │             │             │
         │ │             │             │
LOW      │ │  Adaptive   │   Cosmetic  │
         │ │             │             │
         └─┴──────┬──────┴──────┬──────┴───▶
                  LOW          HIGH
            CHANGE IN REPRESENTATION
```
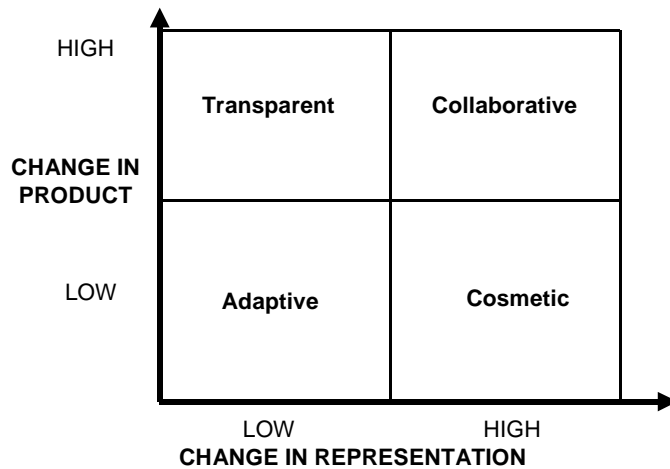
Figure 3: Change in Product and Change in Representation (Gilmore/Pine 1997)

Gilmore and Pine (1997) identified four customization alternatives corresponding to change/no change in product and presentation. Riihimaa et al. (2004) mentioned key focus areas when moving from one generic strategy to another.

But we have to change more, than products, their representations or processes to get into Mass Customization Business (See also Fern 2002):

- Change strategy
- Change products, processes, representation (Modularization, Flexible systems)
- Change employee (Recruiting, Incentives, Training, Working conditions)
- Change relationships (Suppliers, Customers)
- Change marketing (Direct to customer, Active listening)
- Change organization (Empowerment, Integrated teams)
- Change focus (Tangible and Intangibles - Intellectual Capital)
- *Change the way of thinking and learning*

Until today the technological challenges of Mass Customization strategy were drawn at the center of attention, although Pine (1993) and also Piller (2000:100) have already pointed at the behavior and not the technology orientation. In the meanwhile the focus has actually changed.

Twelve years after Pine (1993), Piller (2005) writes in his newsletter: "Have you ever wondered why so many mass customization projects fail? One cause beyond the typical reasons discussed (like incomprehensive IT systems, lack of branding, wrong scope of variety, etc.) may be the strong demand for **internal change management** -- **an issue not discussed in the mass customization literature before.** However, in the meetings of an industry board of mass customization experts, hosted monthly by our research group at TUM Business School, change management for mass customization was mentioned as a predominant need and major factor of success. Why change management? Mass customization empowers customers to become co-creators and design their own, individual products or services. Empowered customers, however, have

to meet motivated and competent employees. The company's employees have to understand mass customization and their roles in this co-creation process. Managing mass customization thus includes to manage the internal change in an existing organization that is moving from a closed production system towards a system of mass customization. Shifting the locus of value creation towards customers requires no less than a **radical change in** the management **mind-set** (…). Companies have to develop change management programs addressing this need."

The challenge of transformation for companies is basically intellectual rather than technological.

3. Change Management – Management of Change – Change the Management

As the speed of change is so fast, the need for flexible measures and the ability to allow new ideas the room to evolve will be very important. At the same time, a period of rapid change tends to frighten both people and institutions into defensive positions, in which it seems easiest to revert to well-known ways of thinking and well-known ways of work. This creates a challenging situation where **the need for new thinking and for new ways of solving problems** will be confronted with groups trying to protect what they control today, fearful of losing influence in a society with new ground rules and new goals (Pamlin 2003:246).

Individuals and organizations give preferred treatment to alternatives that represent continuation of present programs over those that represent change (March/Simon 1958:173). Generally, mind change entails the alteration of mental representation.

While the belief in the traditional organization was to reduce the internal world complexity, in the modern organization should be recognized that the internal world complexity must be permitted, so that the organization can link up at the accelerated external complexity, through the increase of its own complexity. For this reason the transformation into decentralised, self driven and functionally redundant organization forms is a possible choice (Götz 2003:53).

Under Change Management it is primarily understood the targeted driving and forming of change processes in the enterprise; these will be carried out by individuals, groups or also from the organization as a total. This is possible only through the active evolvement of all employees of the enterprise. The people that these changes concern should be turned into participants (Müller-Stewens/Spickers 1995:7).

A change process generally addresses the targeted organization of the 3-steps: 1. Variation, 2. Selection, 3. Retention or better Repetition (…). Because enterprises form social systems, the concern is for enterprises to find the variation of communicative, interactional structures and profiles as well as their stability. **As self creating systems enterprises can be changed only from the inside**. From outside, from market, from the political situation, from the shareholders, from the syndicates or from consultants there could disturbances, but to the issue as to how the enterprise should react to these challenges, should be established through its internally defined rules of the game. The

survival and the adaptation capability of such a system depend upon whether it is capable to change autonomously, its internal structures and processes, in other words, if it is capable to change itself (Simon 2004:251-252).

A possibility for achieving this target offers the Theory of Multiple Intelligences of Howard Gardner.

4. Changing Minds through Representational Redescription

If Innovation and change come from learning (Mayo 2001:195), change management should therefore focused on learning processes on individual and organizational level.

(…) it is necessary for the people in the organization to learn how to adapt the instructions of the [change] programme to their own situation, in other words they need to be equipped with the skills they need to make relevant changes in their behaviour. During the 1980s, David Kolb, a specialist in adult learning, developed a four-phase adult-learning cycle, addressing the issue that it is not sufficient to only listen to instructions (phase 1), but they also need to absorb them (phase 2) and use it experimentally (phase 3) and finally integrate it with their existing knowledge (phase 4). It is clear that this process takes time, and that it is necessary to break down the formal teaching in parts, in order to give the participants time to reflect, experiment, and apply the new principles. (CEN 2004:39)

As human beings we have many different ways of representing meaning, many kinds of intelligence. Since the beginning of the last century, psychologists have spoken about a single intelligence that can be measured by an IQ test; Howard Gardners´ research however has defined 8 human intelligences:

- Verbal/Linguistic
- Logical/Mathematical
- Musical/Rhythmic
- Bodily/Kinestetic
- Visual/Spatial
- Intrapersonal
- Interpersonal
- Naturalistic.

Gardner (2004:29-30) define an intelligence "as a biological potential to process specific forms of information in certain kinds of ways. Human being have evolved diverse information-processing capabilities – I term these "intelligences" – that allow them to solve problems or to fashion products. To be considered "intelligent", these products and solutions must be valued in at least one culture or community. The last assertion of "being valued" is important.

How are Multiple Intelligences relevant to mind changes?

On the most basic level, a change of mind involves a change of mental representation. If I change your idea of doing business (mass production) I am altering the images, concepts, and theories by which you were accustomed to thinking of mass production. Accordingly, the more of an individual´s intelligences you can appeal to when making an argument, the more likely you are to change a person´s mind, and the more minds you are likely to change (Adapted to Gardner 2004:30).
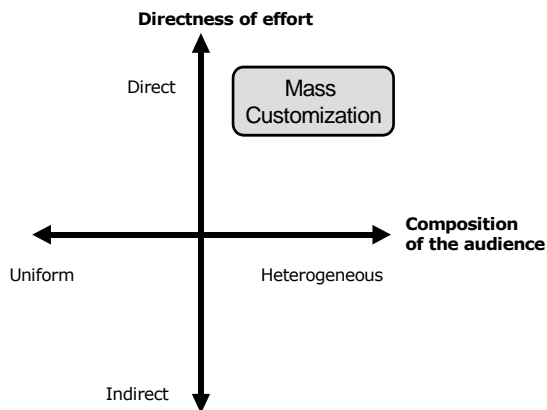
Figure 4: The two axes of mind changing (Adapted to Gardner 2004:130)

Gardner differentiates basically between two axes (Figure 4). Mass Customization is positioned at the right top quarter (Directness of Effort: Direct; Composition of effort: Heterogeneous).

Change Management and Mass Customization: Changing Minds through representational redescription adapted from Gardner (2004:140):

1. Narrative	Telling stories about the topic and the people involved with Mass Customization	Stories about • Toffler, Davis, Pine • Tseng, Piller, Seelmann-Eggebert • M. Piotrowski (PL) • …..
2. Quantitative	Using examples connected to Mass Customization	From various Websites e.g. www.mass-customization.de : • Euro-Shoe-Project • miadidas • Selve • …..
3. Logic	Identify the key elements or units of Mass Customization Strategy and explorr their logical connections	The four levels of Mass Customization: • Differentiation Level • Cost Level • Relationship Level • Solutionspace Level
4. Existential	Adress big questions about a MCP-World	• MCP-Strategy and Sustainability • MCP and social apects • MCP and Tangible and/or intangible economy? • …..
5. Aesthetic	Examining instances in terms of their artistic properties or capturing the examples themselves in works of art	• MCP-Art • Wonderful Open Innovation, Products or Services designed by customers • …..
6. Hands-on	Working directly with tangible examples	• Tangible products (e.g. miadidas) for some of your employees • …..
7. Cooperative or social	Engaging in projects with others where each makes a distinctive contribution to successful execution	• www.mass-customization.pl • www.mass-csutomiaztion.de • www.mcustomization.com • MeetMCP: European Research Activities • …..

Table 1: Changing Minds through representational redescription for Mass Customization (Adapted from Gardner 2004)

References

Abdreta, E. (2005): The impact of the Lisbon declaration on European Policy. In: kowi-aktuell No. 62, 30.

CEN (2004): European Guide to good Practice in Knowledge Management - Part 2: Organizational Culture. URL: ftp://cenftp1.cenorm.be/PUBLIC/CWAs/e-Europe/KM/CWA14924-02-2004-Mar.pdf

Cheng, Y.C. (2004): Learner-Centred Approach: Enhancing Multiple Thinking and Creativity in Action Learning. Invited keynote speech presented at The 4th International Forum on Education Reform, 6-10 September 2004, Bangkok. URL: http://www.ied.edu.hk/cric/new/doc/speeches/6-10sep04.pdf

Davis, S. M. (1987): Future perfect, MA, Addison-Wesley publishing company, INC

Duray, R. (2003): The impact of workforce management on the financial performance of mass customizers, 2nd MCP-Worldcongress 2003.

Fern (2002): What must we change to get into the Mass Customization Business. URL: http://www.asapm.org/resources/SixSteps.pdf

Franz. H.-W. (2002): How organisations learn – a theory of learning and organisational development. URL: http://www.sfs-dortmund.de/docs/docsakt/franz1ch4.pdf

Freund, R. (2004): Mass Customization and Multiple Intelligence. Keynote at the 1st MCP-Conference in Central Europe, Rzeszow, Poland. URL: http://www.robertfreund.de/download/Robert%20Freund%20Keynote%20MCPC2004%20Rzeszow.pdf

Fung, G.; Boysen, A.; Chignell, M. (2001): A Model of Personalization. 1st Worldcongress on Mass Customization and Personalization, Hong Kong.

Gardner, H. (1993). Intelligences reframed, New York.

Gardner, H. (2002): Intelligenzen. Die Vielfalt des menschlichen Geistes, Stuttgart.

Gardner, H. (2004): Changing Minds.

Gilmore, J.H.; Pine II, B.J. (1997): Four Faces of Mass Customization. Harvard Business Review, Jan-Feb 1997, 91-101.

Götz, K. (2003): Bildungsmanagement in betrieblichen Weiterbildungs-abteilungen. Studienbrief Nr. 0710 des Fernstudiengangs Erwachsenenbildung der Universität Kaiserslautern. Kaiserslautern.

Levy, J. (2003): Creating a change management knowledge infrastructure, Information Management & Consulting, Vol. 18, 2003. URL: http://www.people.cornell.edu/pages/jl63/IM1-03%20p12-16.pdf

March, J. G.; Simon, H. A. (1958): Organizations, New . A. (1958): Organizations, New York/London/Sydney.

Martin, J. (2001): Erfolgreiches Personalmanagement nach dem Modell der vielfachen Intelligenz, Nürnberg.

Mayo, A. (2001): The human value of the enterprise. London.

MIAPP (2004): The application of Multiple Intelligences theory to increase the effectiveness of e-learning, recruitment practices and Internet search engines URL: http://www.miapp.net

Müller-Stewens, G.; Spickers, J. (1995): Unternehmerischen Wandel erfolgreich bewältigen. Change Management als Herausforderung. Betriebswirtschaftlicher Verlag. Wiesbaden.

Pamlim, D. (2003): Only for the better? In: Pfeiffer/Schoof (Ed.) (2003): Wh@t´s next, p. 244-259

Piller, F. (1998): Kundenindividuelle Massenproduktion, München.

Piller, F. (2000): Mass Customization, Wiesbaden.

Piller, F. (2003). Mass Customization News. Newsletter on Mass Customization, Personalization and Customer Integration, Vol. 6, No. 1 (May 2003). URL: http://www.mass-customization.de/news/news03_01.htm

Piller, F. (2005): Mass Customization News -- A Newsletter on Mass Customization, Personalization and Customer Integration, Vol. 8, No. 1 (January 2005) URL: http://www.mass-customization.de/news/news05_01.htm

Piller, F.; Stotko, C. (2003): Mass Customization und Kundenintegration, Düsseldorf.

Pine, J. P.(1993): Mass Customization, Harvard Business School Press, Boston, MA.

Riihimaai, J.; Ruohonen, M.; Mäkipää, M. (2004): Transitions in Mass Customization Strategies – Requirements for Information Systems. URL: http://www.cs.uta.fi/is/julkaisut/2004/2004_Riihimaa_Ruohonen_Makipaa.pdf

Selladurai, R.; Scott, C. (2004): Mass Customization Strategy in Management and its Applications to Small Business. URL: http://www.sbaer.uca.edu/research/sbi/2004/pdfs/24.pdf

Simon, F. (2004): Gemeinsam sind wir blöd!?

Svensson, C.; Jensen, T. (2001): The customer at the final frontier of mass customisation, 1st Worldcongress on Mass Customization, Hong Kong.

Taylor, D. A. (2004): Supply Chains, Boston.

Toffler, A. (1971): Future shock, New York.

Tseng, M.M. , Jiao, J. (2001): Mass Customization, in G. Salvendy (Ed.) Handbook of Industrial Engineering, 3rd edition, New York: Wiley, 2001, pp. 684-709.

Von Hippel, E. (2001): Perspective: User Toolkits for Innovation, The Journal of Product Innovation Management, 18 , pp. 247-257.

Webster Online (2003):
URL: http://www.webster.com/cgi-bin/dictionary?book=Dictionary&va=personalize