



**Hochschule für Technik
und Wirtschaft Berlin**

University of Applied Sciences

**BIB Innovation Management: WS 10/11
Mueller - Prothmann / Doerr**

Morphological Box

**A Presentation by
Alina Sachapow
Vanessa Günther
Luise Kraatz**

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1. Introduction

- Invented by the astrophysicist Zwicky for improvement of military jet propulsion
- Morphology: Greek: „theory of the arrangement, structure and shaping“
- Theory of the ordered thinking



2. Definition

- Essentially, morphological analysis is a method for identifying and investigating the total set of possible relationships contained in any given, multi-dimensional problem complex that can be parameterized.
- “Morphological analysis is simply an ordered way of looking at things.” (Zwicky)

2. Definition

- new combinations of products, services and strategies
- "organized invention"
- to improve an existing product technically
- to find a solution for a problem
- to find new ideas or to develop an old idea
- rational, analytical and structured thinking
- tool to divide a problem into smaller pieces

2. Description

Opening Hours	Service	Main Dishes	Prices	Extras
7h-16h	Automate	Vegetarian	5 Euro	Salad and Fruits
7h-11h	Self-service	Whole food	8 Euro	Snacks
11h-14h	Order service	Exotic	12 Euro	Dessert
14h-17h	Table service	Normal mixed food	15 Euro	Pastries

2. Application

- generally: if a problem can be divided into smaller components
- if the problem is carefully analyzed and different solution components are known

2. Application

- Principle solutions for concepts
- Concrete part solutions for a draft
- To find alternative production processes or a new manufacturing concept
- Systematic analysis of the structure of an industry area or gaps in that structure

2. Application

- Improve or change strategy
- Analyze risks
- Developing models for positional or stakeholder analysis
- Present complex relationships in an easily understandable visual model

3. Procedure – Step 1

- The problem to be solved must be very concisely formulated.
- **E.g.: How can a canteen be organized?**

3. Procedure – Step 2

- Fragmentation of the problem or product into its single components and entry into the first column of the matrix

Opening Hours	Service	Main Dishes	Prices	Extras

3. Procedure – Step 3

- The morphological box, which contains all of the potential solutions of the given problem, is constructed.

Opening Hours	Service	Main Dishes	Prices	Extras
7h-16h	Automate	Vegetarian	5 Euro	Salad and Fruits
7h-11h	Self-service	Whole food	8 Euro	Snacks
11h-14h	Order service	Exotic	12 Euro	Dessert
14h-17h	Table service	Normal mixed food	15 Euro	Pastries






3. Procedure – Step 4

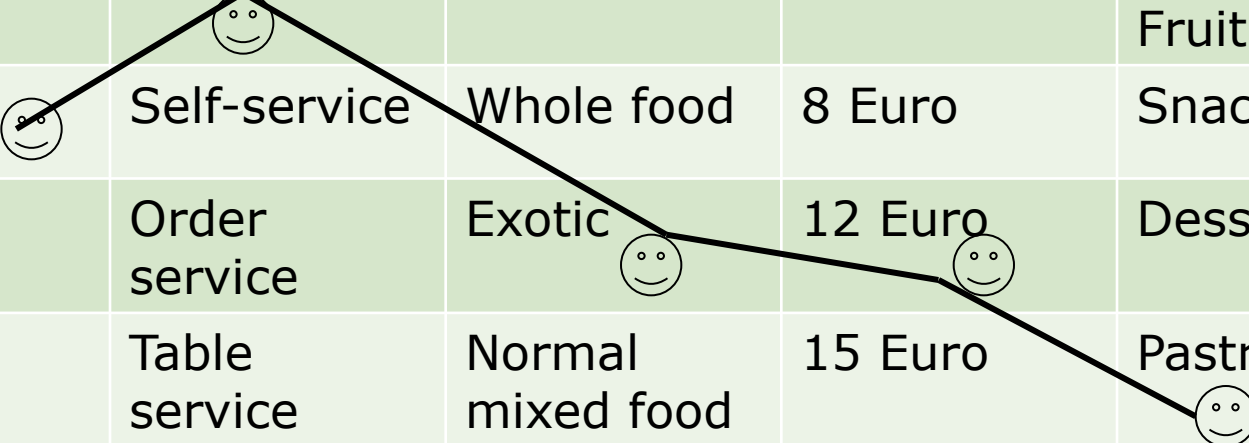
- All solutions contained in the morphological box are closely scrutinized and evaluated with respect to the purposes that are to be achieved.

Opening Hours	Service	Main Dishes	Prices	Extras
7h-16h	Automate	Vegetarian	5 Euro	Salad and Fruits
7h-11h	Self-service	Whole food	8 Euro	Snacks
11h-14h	Order service	Exotic	12 Euro	Dessert
14h-17h	Table service	Normal mixed food	15 Euro	Pastries

3. Procedure – Step 5

- The optimally suitable solutions are selected and are practically applied, provided the necessary means are available.

Opening Hours	Service	Main Dishes	Prices	Extras
7h-16h	Automate 	Vegetarian	5 Euro	Salad and Fruits
7h-11h 	Self-service	Whole food	8 Euro	Snacks
11h-14h	Order service	Exotic 	12 Euro 	Dessert
14h-17h	Table service	Normal mixed food	15 Euro	Pastries 



4. Interactive Example



4. Interactive Example



5. Positive Aspects

- The straight forward presentation of the table
 - very structured and therefore till now overlooked combinations may be discovered
 - eases the understanding of outsiders
- No single solution is rejected but the completed solutions are evaluated

5. Positive Aspects

- Richness of data
 - It can provide a multitude of combinations
 - Through the variety of possible combinations creative potentials are originated

5. Negative Aspects

- Might be too structured → this could inhibit free, creative thinking
- May yield too many possibilities → loss of overview, no guidelines for making combinations
- Human error → the development of morphological boxes requires critical judgments
- Cannot be effectively carried out in groups larger than 7-8 participants

6. Conclusion

- Method can be efficiently used if:
 - Qualified people
 - Small groups
 - Many different problem components

"... within the final and true world image everything is related to everything, and nothing can be discarded a priori as being unimportant."
(Fritz Zwicky)

6. Conclusion

"Essentially, morphological analysis is a method for identifying and investigating the total set of possible relationships contained in any given, multi-dimensional problem complex that can be parameterized."

Sources

- Backerra, Malorny, Schwarz: Kreativitaetstechniken, Hanser
- Ehrlenspiel: Integrierte Produktentwicklung, Hanser Verlag
- Klimmer, 2007: Unternehmensorganisation, Verlag Neue Wirtschafts-Briefe GmbH & Co. KG
- Mueller- Prothmann, Doerr, 2009: Innovationsmanagement, Muenchen: Hanser
- Pepels: Produktmanagement, R. Oldenbourg Verlag München Wien
- Preißner: Praxiswissen Controlling, Hanser Verlag
- Schmitt: Qualitätsmanagement, Hanser Verlag

Sources

- <http://www.swemorph.com/ma.html> 13.10.10
- <http://www.diegm.uniud.it/create/Handbook/techniques/List/MorphoAnal.php> 13.10.10
- http://www.mindtools.com/pages/article/newCT_03.htm
13.10.10



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