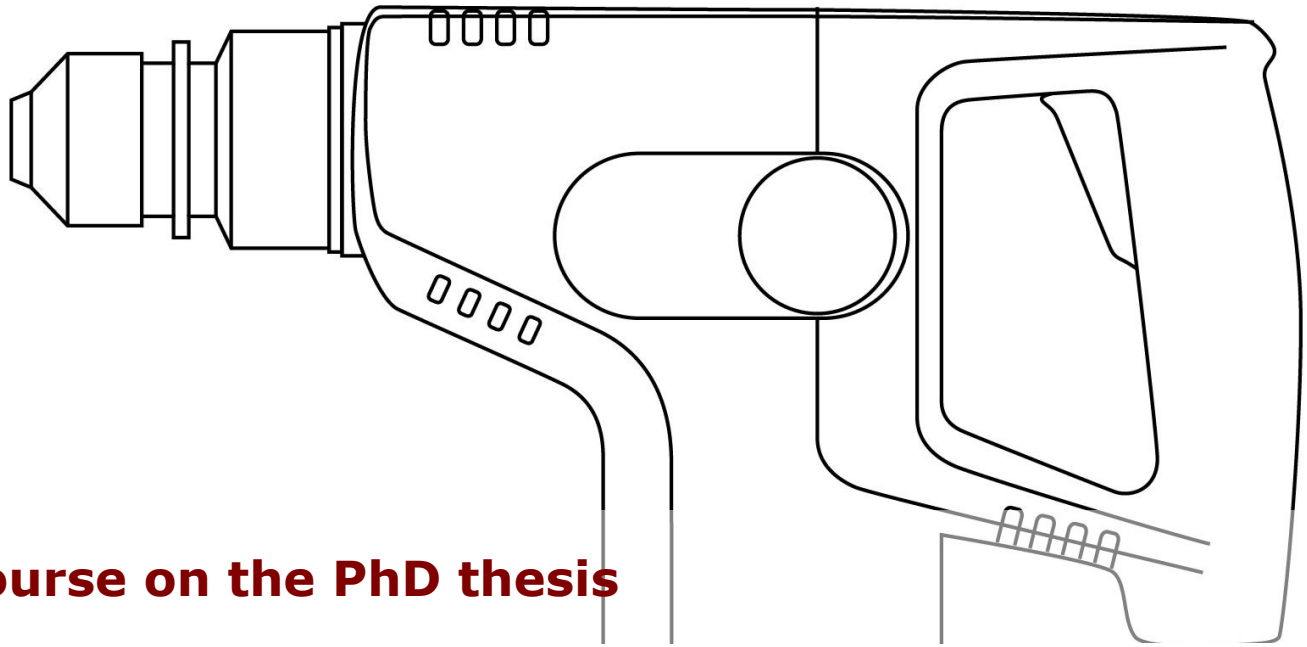

Discourse on the PhD thesis

Ing. Martin Ondra

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Brno University of Technology

IMID seminar
Brno, 28. 5. 2014

Discourse on the PhD thesis

Basic info

- Title: **Brand identity in design of industrial product**
- Mentor: **Doc. Ing. arch Jan Rajlich**
- **Study of NAREX brand identity and its reflection in design of industrial products**

Typical product communicating brand identity – Coca Cola bottle [1]

Definition of problem and preliminary objective

- Brand identity is a key marketing strategy – product design is important element
- Design and brand identity through shape grammar method
- Objective methods of comparing design

- Study of innovation process on NAREX product throughout its history, with use of shape grammar and objective methods for analysis of shape
- Defining a shape grammar of NAREX brand identity
- Simulation of new product design including brand identity

Current state of art – general knowledge

- **Brand identity**
  - Set of associations with the brand, which the company tries to define and maintain
  - Definition of actual company or product

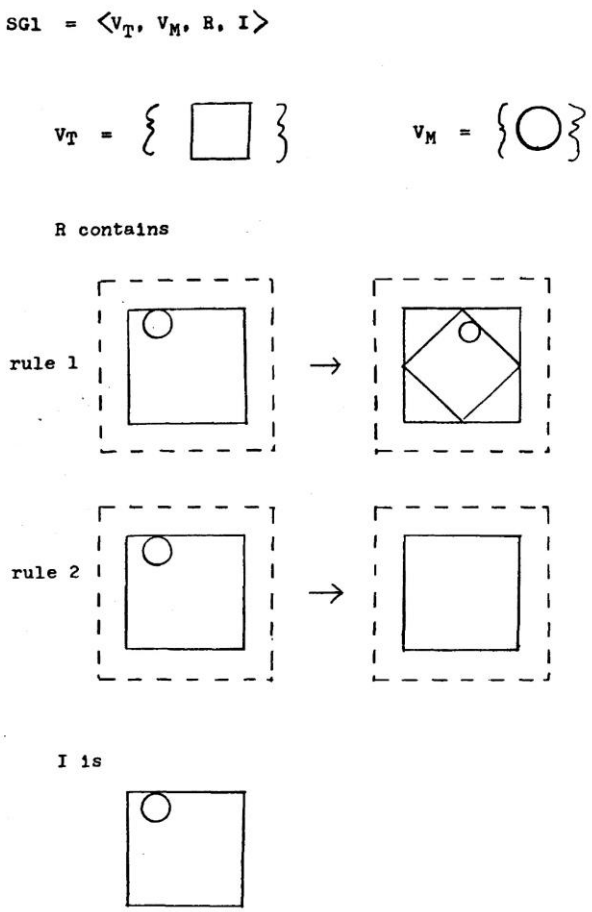
  - Must be clearly defined
  - Product communicates with customer through direct, undirect, qualitative messages

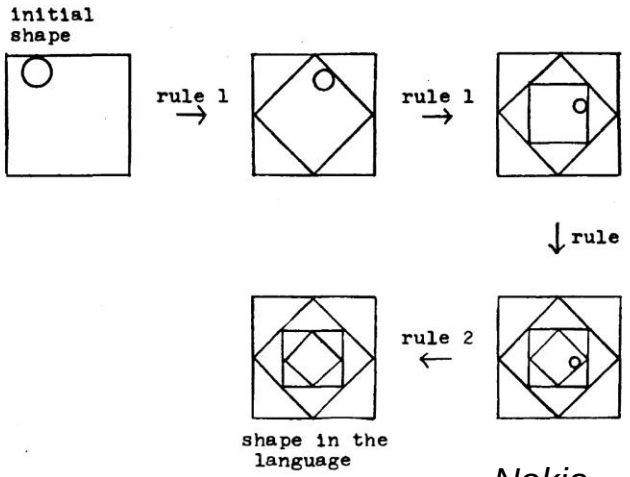
Nokia - Historical evolution of products [2]

Current state of art – general knowledge

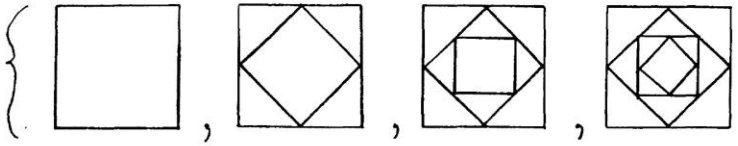
- **Shape grammar**
  - Defined by **Stiny** and **Gips**, studied by **Knight**
  - Generative specification method used to generate and study art, sculpture
  - Contains 4 elements
    - Set of general shapes
    - Set of markers
    - Set of rules
    - Set of initial shapes
  - Potentially creates infinite number of solutions from finite number of shapes
  - May have qualitative element – colour
  - Always combination of known elements

Current state of art – general knowledge





A generation using SG1.



The language defined by SG1.

Nokia - Historical evolution of products [2]

STINY - Basic shape grammar [3]

Discourse on the PhD thesis

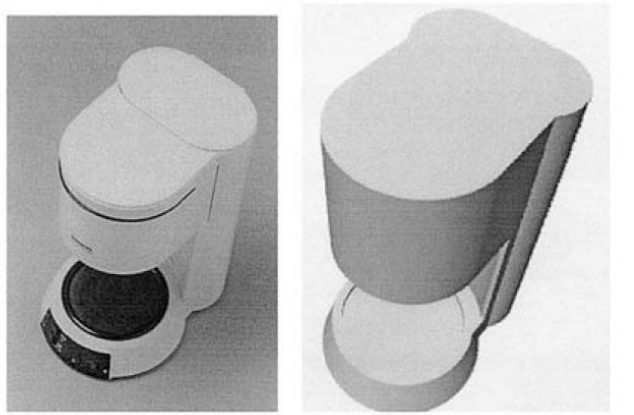
Current state of art design research with SG

- Studied to define design language of product family
- Finding solutions to engineering problems – construction

- **Capturing brand identity**
  - Using 2D image representations
  - Generating designs corresponding to brand identity

- **Innovation of product**
  - Typical shapes of brand in SG
  - Generating designs which are innovative by parametrization of known shapes

[4]



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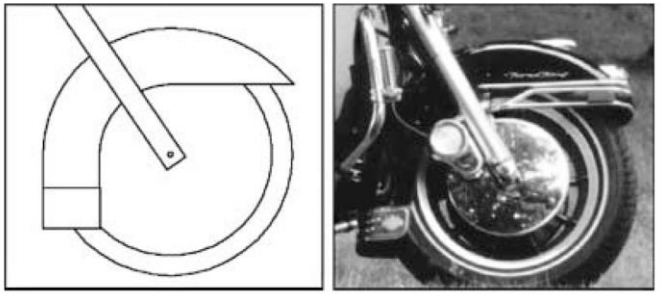

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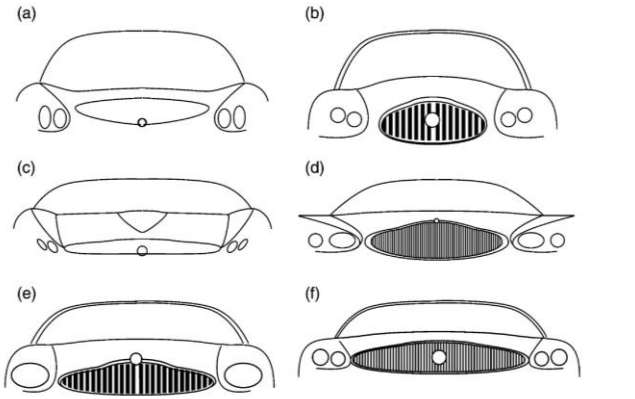
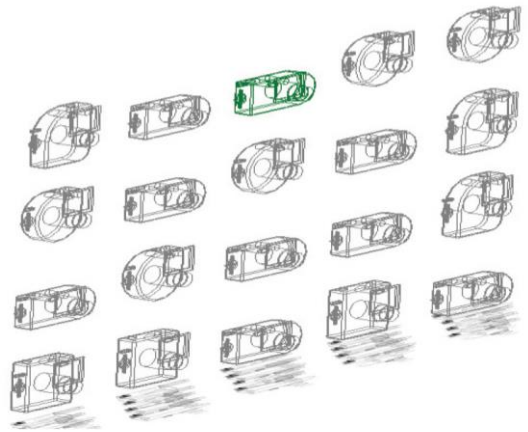


Current state of art – SG interpreters

- Computer support makes shape grammar useful
- Optimalization needed – generating undesirable designs
- Sketching tool
- Most helpful in early phase of design

- **Current trends**
  - use of genetic algorithms for optimalization of generated design
  - study of phenomenons in design, rules of SG

[7]



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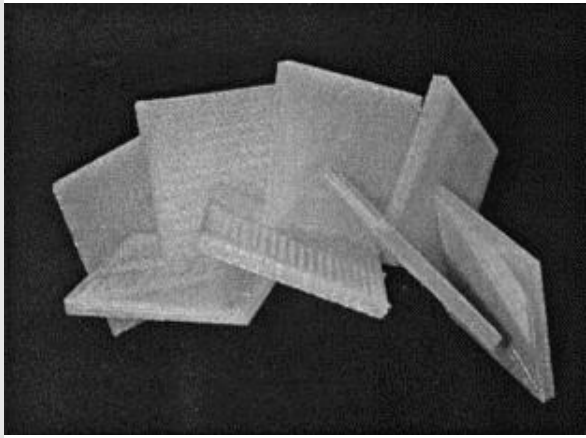

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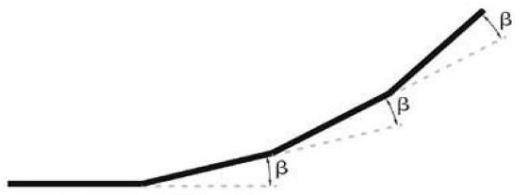
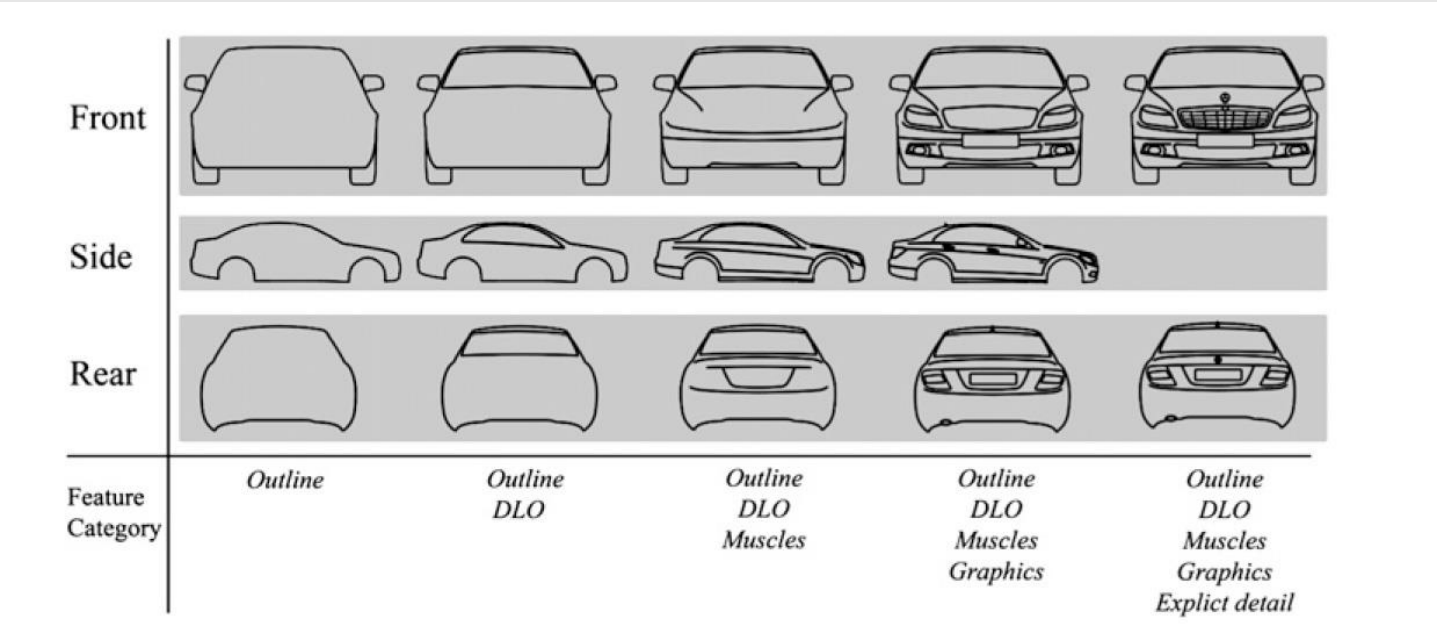


Current state of art – product analysis

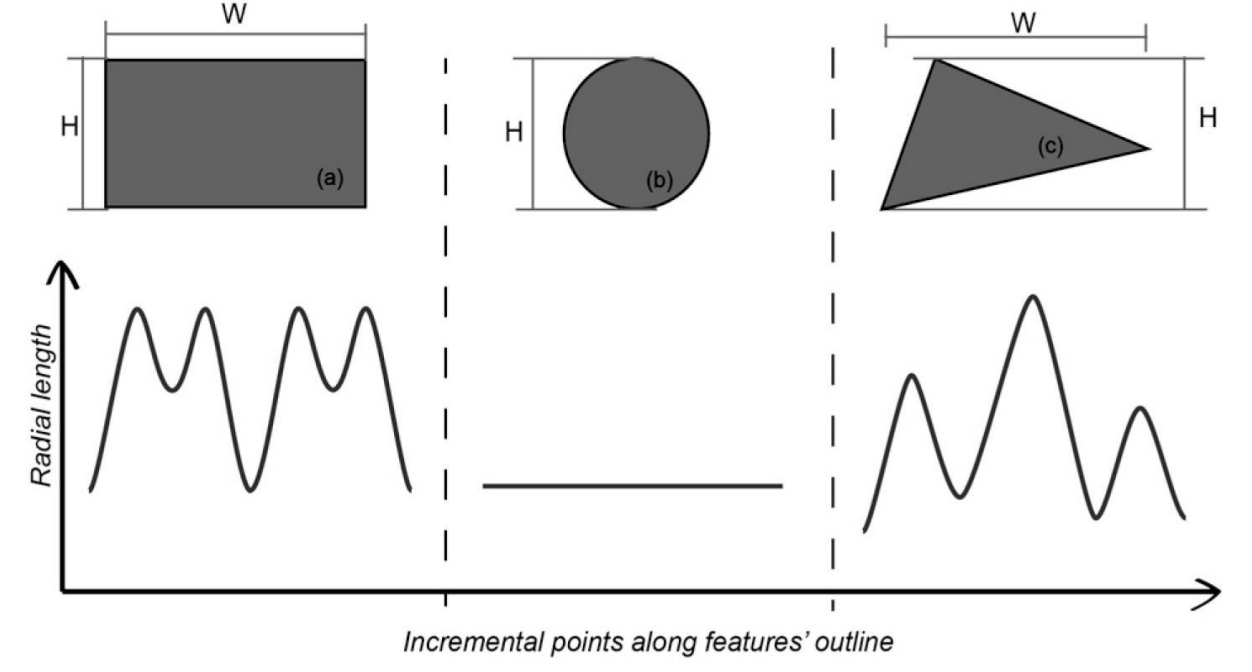
- Visual decomposition
  - Choosing between different level of image representation
  - Finding aesthetic elements important to brand recognition



Visual decomposition of vehicles [10]

Current state of art – product analysis

- Method for finding similarities
  - Objective method for finding similar design elements
  - Position, orientation, shape



Analysis of basic shapes[11]

Interpretation of gained knowledge

- Brand identity arises with visual communication of the brand (product design)
- Most research of product innovation uses shape grammar
  - Uses only combination of existing elements
  - Shape grammar based on past products bears brand identity
  - Finding possibilities we may have missed
  - Finding large number of possible solutions to one problem
  - Use of 2D pictures is enough to recognize brand
  - Rules of shape grammar and their relationship to brand identity were not studied
  - SG does not implement the ordinary innovation process
  - Necessity to optimize results when computer support is used
- Objective methods may be used to find similar elements of design

Definition of objectives

- Description of brand identity transition throughout the innovation of product

- Reaching objective include necessary milestones
  - Analysis of NAREX products and finding their key design elements
  - Creating shape grammar for NAREX brand
  - Definition of methodics of innovation of product with brand identity
  - Simulation of early phase of design of new industrial product

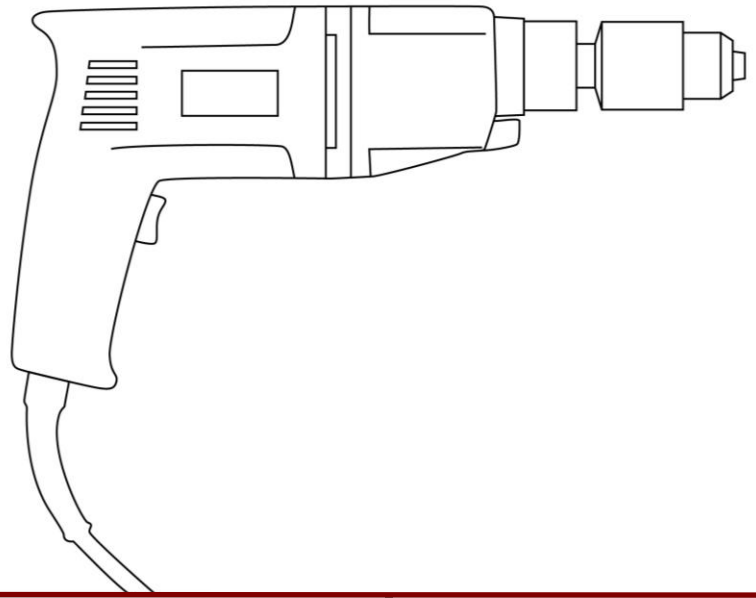
Impact drill – NAREX Česká Lípa

Solution

- Collecting and analysing data
  - Photographies from company, archives, collectors
  - If available scanning of 3D data
  - Preparation of data for analysis
  - Analysis of design between product family and between product throughout history
  - Finding key elements to maintain in shape grammar
- Shape grammar
  - Using CAD (Rhinoceros with Grasshopper module)
  - Optional development of own interpreter
  - Verification of SG correctness

Solution

- Methodics
  - Creating design of new product with shape grammar
  - Study of processes during the designing
  - Finding criteria for design of product with NAREX brand identity

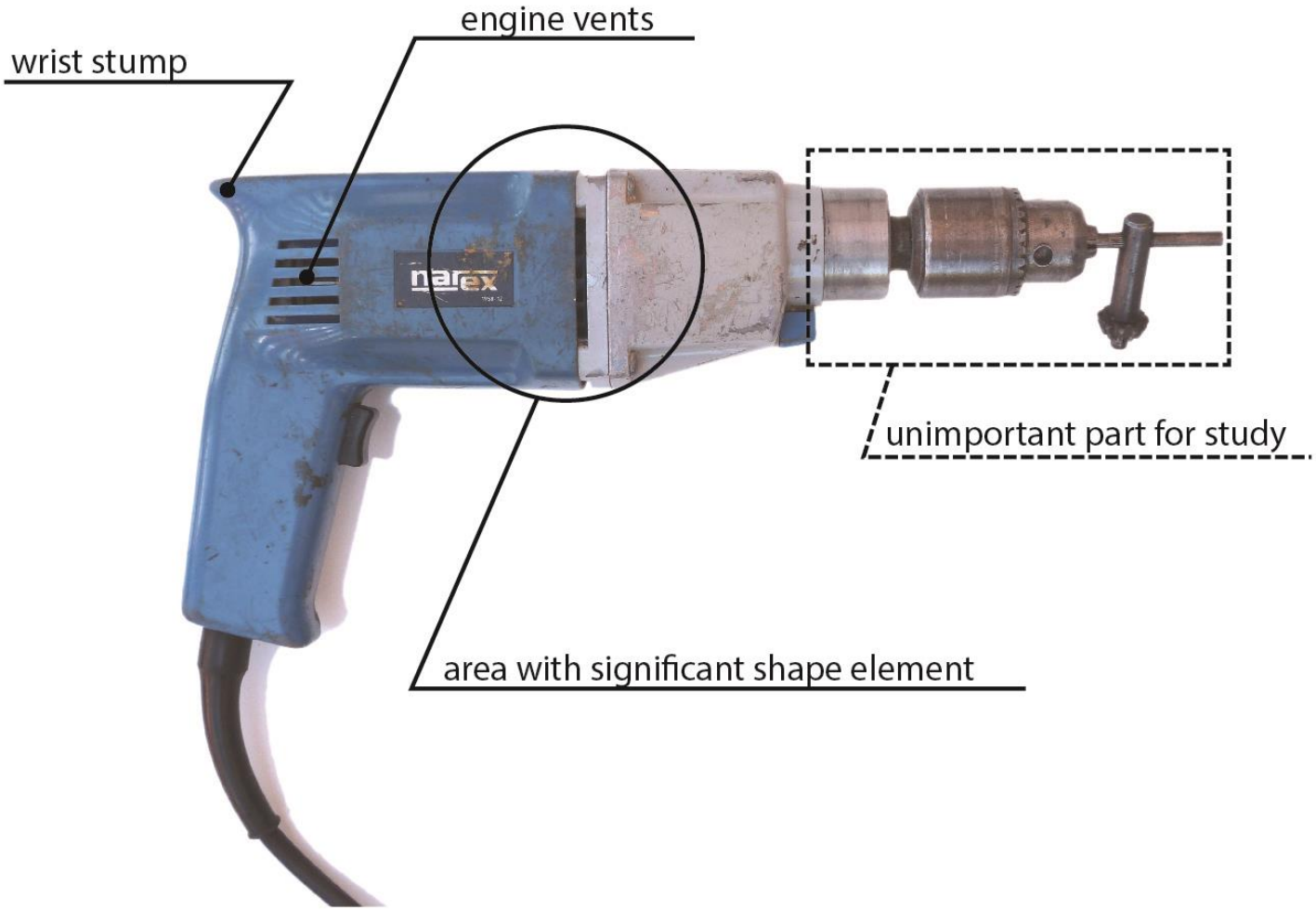


Current state of PhD thesis

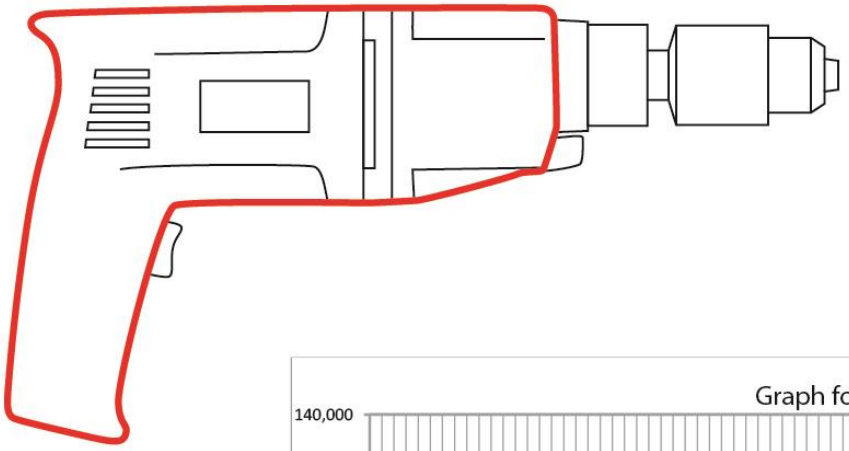
- Done
  - Current state of art (continuously updated)
  - Collected methods for research
  - Collaboration with company

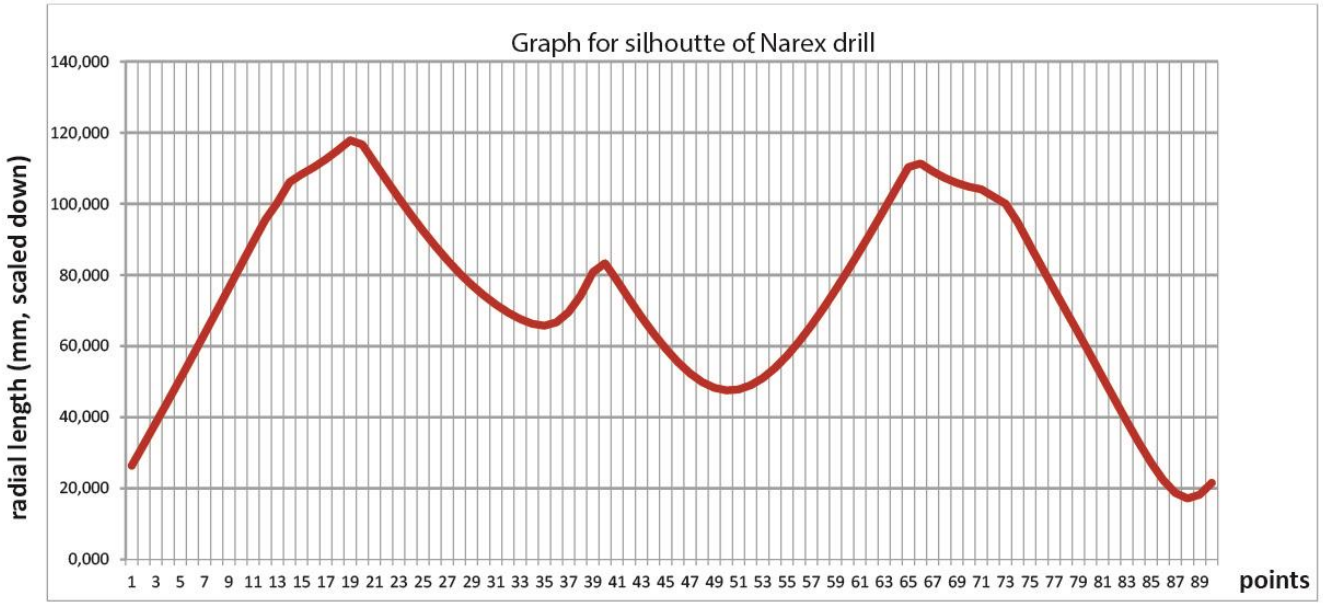
- In process
  - Collecting research data
  - Choosing representation of product
  - Data first analysis

Current state of PhD thesis



Current state of PhD thesis





Current state of PhD thesis

- Future
  - Finding key design elements
  - Shape grammar
  - Study of innovation processes
  - Publishing

Conclusion

- The discourse summarizes knowledge about brand identity, and research about its transition during design of an industrial product
- Disadvantage of Shape grammar is restriction to use of existing data, therefore it is helpful to study methods designer uses in reality throughout the innovation of product
- Study of brand identity of Czech company may be useful in further research of Czech design
- For reaching objective it is necessary to collect enough data about NAREX products

Thank you for your attention

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Brno University of Technology

IMID seminar
Brno, 28. 5. 2014

Bibliography

[1] Evolution of the bottle, [online] www.urbanpeek.com, cit. 27. 5. 2014

[2] KARJALAINEN, T. M., Designing Visual Recognition for the Brand. , 2010, v. 1.; č. 27.; ISSN: 1540-5885

[3] STINY, G., GIPS, J., Introduction to shape and shape grammars, 1980, č. 7, str. 343-351, ISSN:1472-3417

[4] AGARWAL, M., CAGAN, J., A blend of different tastes: the language of coffee makers, 1998, č. 25, str. 205-226, ISSN:1472-3417

[5] PUGLIESE, M. J., CAGAN, J., Capturing a rebel: modeling the Harley-Davidson brand through a motorcycle shape grammar, , 2002, č. 13, v. 3, str. 139-156, ISSN: 1435-6066

[6] McCORMACK, J. P., CAGAN, J., CRAIG, M. V., Speaking the Buick language: capturing, understanding, and exploring brand identity with shape grammars, 2004,v. 1., č. 25., str. 1-29, ISSN: 0142-694X

[7] LEE, H. CH., HERAWAN, T., NORAZIAH, A., Evolutionary grammars based design framework for product innovation, 2012,
č. 1., str. 132-136, ISSN: 2212-0173

[8] WANG, Y., DUARTE, J. P., Automatic generation and fabrication of designs, 2002, č. 11, v. 3, str. 291-302, ISSN: 0926-5805

[9] PRATS, M. a kol., Improving Product Design via Shape Grammar tool. , Dubrovnik, 2004

[10] RANSCOMBE, CH., HICKS, B., MULLINEUX, G., BALJINDER, S., Visually decomposing vehicle images: Exploring the influence of different aesthetic features on consumer perception of brand, 2011,v. 4., č. 33., str. 319-341, ISSN: 0142-694X

[11] RANSCOMBE, CH., HICKS, B., MULLINEUX, G., Method for exploring similarities and visual references to brand in the appearance of mature mass-market products. 2012,v. 5., č. 33., str. 496-520,
ISSN: 0142-694X