Brand identity in design of industrial product

Martin Ondra,

mentor: doc. Ing. arch. Jan Rajlich

Institute of Machine and Industrial Design

Faculty of Mechanical Engineering

Brno University of Technology

Defence of dissertation thesis
11th October 2017

Institute of Machine and Industrial Design

Motivation

- **To know more**

- How to design a product for brand identity
- Process of innovation
- Search for brand (own) identity

Timeline of Coca-Cola bottles.

Source: urbanpeek.com

Content

- Current state of the art
- Aim of the thesis
- Materials – the Brand
- Brand analysis – Logo and colours
- Brand analysis – shapes
- Shape grammars
- Discussion
- Interview with Miloslav Šindler
- Conclusion

Current state of the art

What is this Brand identity?

- Brand identity is a sum of desired properties' associated with the brand, these are to be given and cared for by the company planners [1]
- Branding is the process of creating such own definition for a specific brand or a product [1]
- Every company has its identity whether it recognizes or not [2]

„Brandon" – authors impression of identity components.

Picture created solely for this presentation

Current state of the art

Brand and the design

Product design is part of the brand identity and therefore it communicates this identity to customers [3][4]

When recognized, precise identity contributes to succes of the brand

According to Karjalainen product communicates the identity on 3 levels:

- Directly – logo, shape of the hood
- Qualitatively – design elements defined on long term basis
- Non-directly – experience based messages

Colours in the identity

- Effect the brand personality [5]
- Depending on the market, colour differentiation is advantage or disadvantage [6]

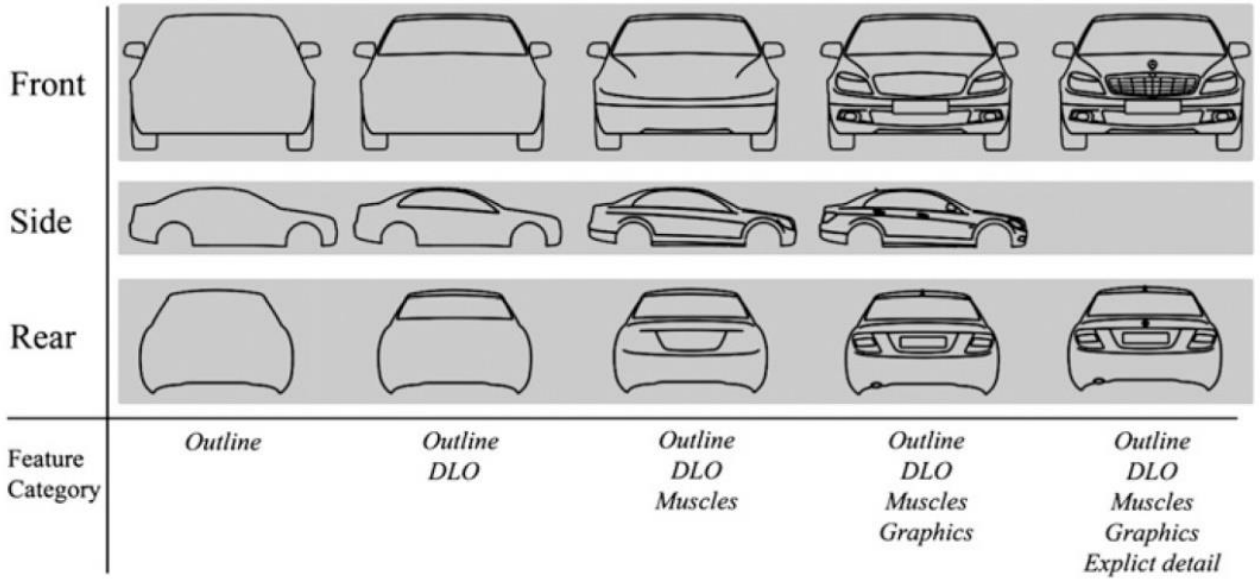
Nokia 3310, icon of company‘s attitude to design and controls.

Source: kurzy.cz

Current state of the art

Decomposition

- Decomposing to levels of features – Outline, Inner holes, Muscles, Graphics, explicit details
- despite the visual representation of the vehicle is in high abstraction, yet the brand can still be identified.
- more difficult to identify vehicle category than the brand [7]



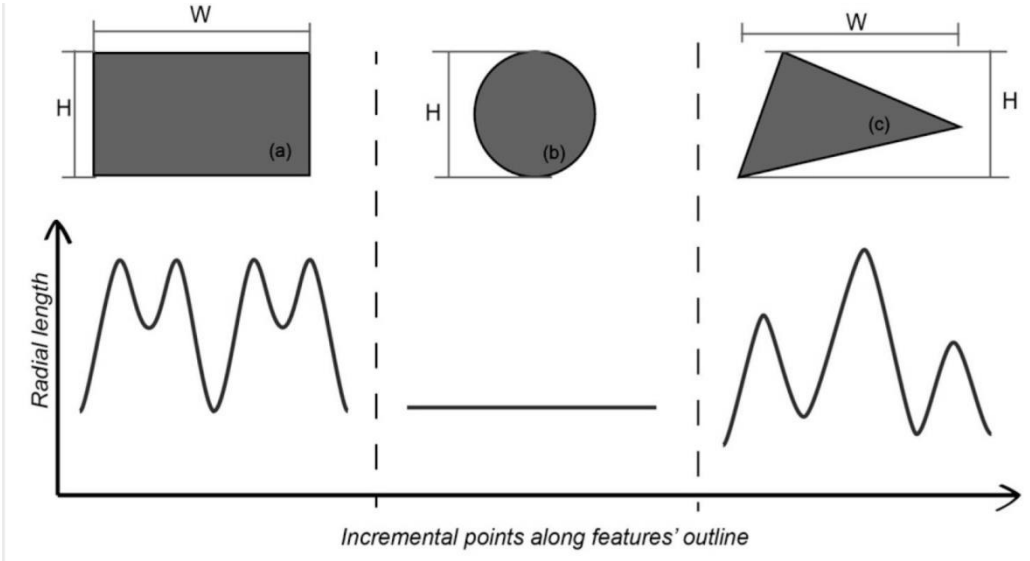
Layers of vehicle decomposition

Source: [7]

Current state of the art

Method for exploring similarities

- Presented by Ranscombe et al. [8]
- Exploring in proportion, orientation and shape
- Products from or outside of group can be compared
- Based on curves from decomposed features and their centroids
- Degree of similarity shows relative similarity



Examples of shapes and their respective analysis

Source: [8]

Current state of the art

Shape grammars

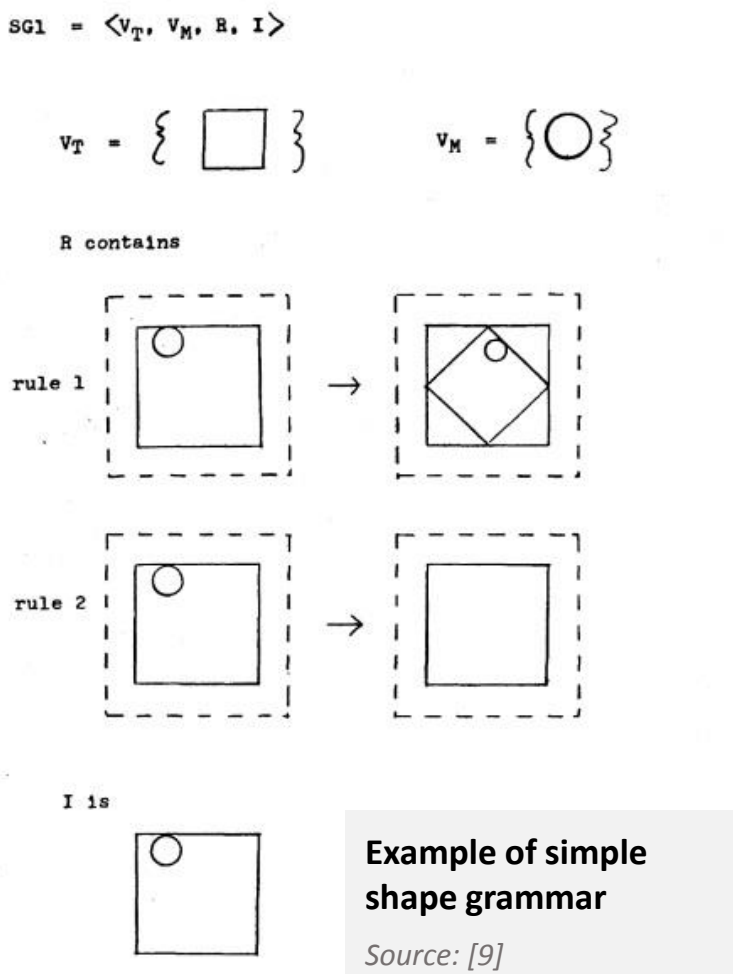
Firstly presented by Stiny and Gips [9]

generative technic for creating good art objects and the understanding development of what creates the good art objects.

Based on language grammars

Every grammar consist of 4 sets

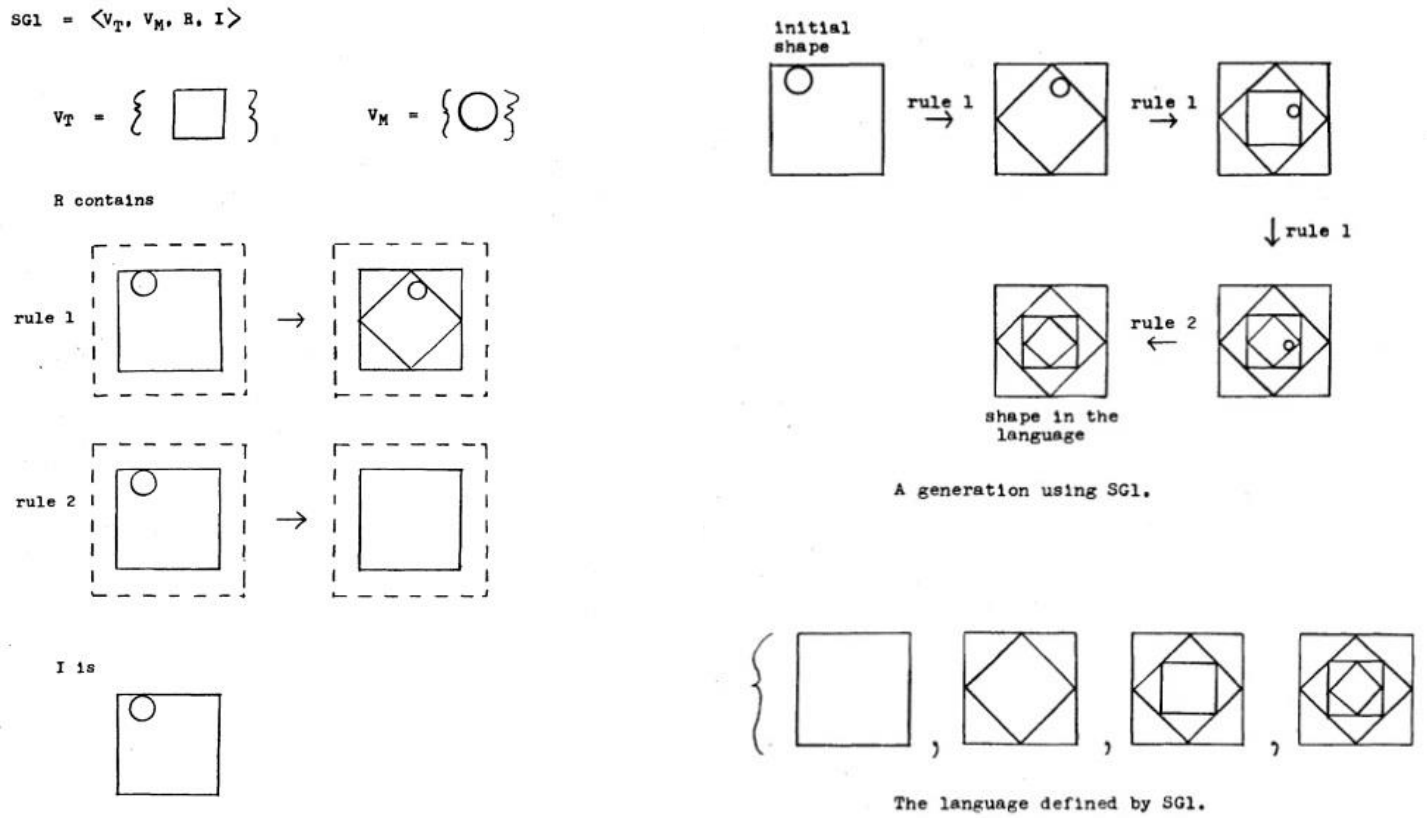
- Set of end shapes
- Set of markers
- Set of rules
- Initial shape



Example of simple shape grammar

Source: [9]

Current state of the art



Example of simple shape grammar (left) and example of rule application with generated results (right)

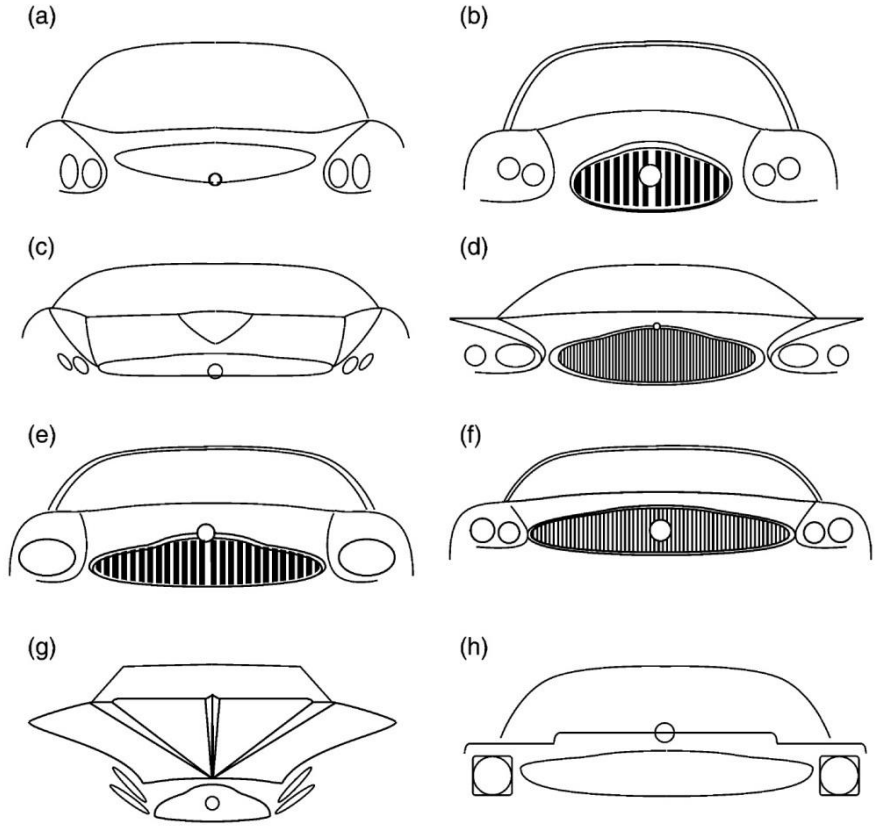
Source: [9]

Current state of the art

Shape grammars in design

- Language of Coffee makers [10]
- Generating Harley Davidson [11]
- Generating Buicks [12]
- Generating Mini [13]
- Shape grammar tools [14][15]

- No study comparing the design process to shape grammars
- Shape grammars can generate only combinations of elements given in the start.



Generated front masks with Buick shape grammar

Source: [12]

Aim of the thesis

State of the art

- Every brand has identity
- Key similarities form brand identity
- Shape grammars work with combination of these similarities
- No one compared designing process and innovation to computation
- Design is important for brand identity on the competitive market

Interests

- Define existing identity to help the brand
- Learn how to design for brand identity
- Improve shape grammar to be more useful to designers

Aims

- Gather materials and knowledge
- Design two concepts non/generatively
- Analyse the brand for similarities and try to find out what forms the identity
- Try to generate designed concept with shape grammars
- Conclude what happened during the innovation

Materials

NAREX brand

- Developed from Siemens factory for corded tools, built during WW 2
- Firstly production of licensed tools from other brands (Siemens)
- Nowadays part of concern TTS Tooltechnic Systems AG & Co
- Producing rang of electric tools for professionals with emphasis on quality and reliability

Picture from NAREX museum, located in Česká Lípa

Materials

NAREX products

For thesis, 2 cordless drills, 5 angle grinders, 5 corded drills and 1 corded screwdriver from current and past product lines were photographed

Products photographed in 5 views

All products were decomposed to lines using Rhinoceros 5.0 software, and scaled 1:1, chuck and jaws were not included for analysis

Products

- ASV18-2A, CZ 47037
- EBU018A, EBU 12, EBU13-14CE, EBU15F, EBU15-16CA
- E403II, EC513D, EVP13E-2H3, EVP13C-2H3, EVP13H-2C
- EŠ 312D

Decomposed EC 513D and its photo

Iconic product of NAREX brand from 1970‘s. In several households it still serves to nowadays.

Materials








Products of NAREX brand, available for analysis

Top line – drills

Middle line – screwdriver, cordless drill

Bottom line – angle grinders

(authors photography)





Materials

My design

- Design of electric tools as an experiment without knowledge from following analysis
- Emphasis on brands iconic EC 513D
- Better vibration control
- Designed only as a visual concept for the needs of the thesis
- Designed concepts were decomposed in same way as NAREX products for further analysis

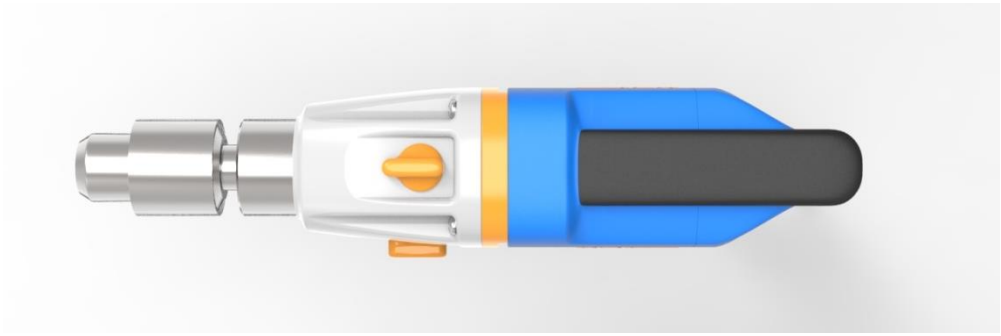
Designing method

1. Specification of the problem
2. Analysis of current market, technical aspects
3. Sketches
4. Final concept

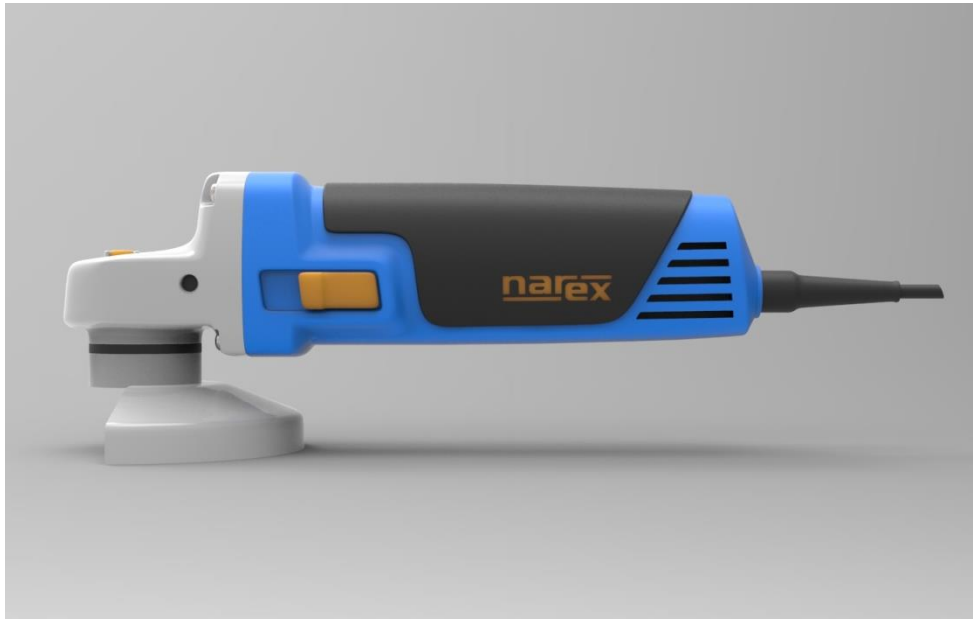
Materials

New drill concept

Created with emphasis on vibration reduction.

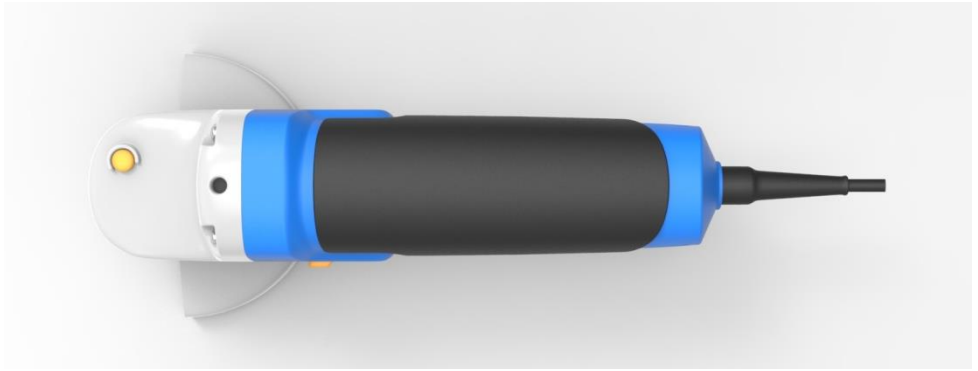


Materials



New angle grinder concept

Created with emphasis on vibration reduction.



NAREX logo

- Official, registered logo from around 1956
- Unchanged logotype, no evolution of the logo

- Logos from the segment are similar
- Market segment uses logotype and simple lines

- Concept – uses just the logotype without rectangle

Old and current logo of brand NAREX

(source: upv.cz)

NAREX colours

- Tried to find whether there are any colour norms in studied range of products
- Method for estimate is based on coloured area from 3 views.

- No certain norm found in use of the 4 brand colours,
- Modern corded tools use 32% ± 4% of gray colour
- Orange control elements
- Black rubber „natural“ colour

Product	% of BLUE	% of ORANGE	% of GRAY	% of BLACK
ASV18-2A	30,648	2,004	4,064	63,283
CZ47037	61,296	1,954	0,000	36,750
E603II	0,000	0,000	98,013	1,987
EBU018A	0,000	0,000	70,991	29,009
EBU12	59,055	1,875	25,440	6,199
EBU13-14E	57,378	2,579	37,168	2,875
EBU15F	31,949	0,724	36,649	30,679
EBU15-16CA	27,672	4,866	35,793	31,668
EC513D	61,033	0,000	36,170	2,797
ES312D	0,000	63,812	30,135	6,053
EVP13E-2H3	59,693	8,375	31,626	0,306
EVP13H-2C	45,448	6,300	28,850	19,402
EVP13C-2H3	60,815	4,218	34,968	0,000
Average	**38,076**	**7,439**	**36,143**	**17,770**
Average drill	56,747	4,723	32,903	5,626
New drill concept	44,855	6,630	24,639	23,876
Average grinder	35,211	2,009	41,208	20,086
New grinder concept	41,523	1,533	25,995	30,949

Concept vs the brand

Brand products

- Logo in rectangular format, blue background
- Blue and gray colour, with orange controls and black rubber parts

New concepts

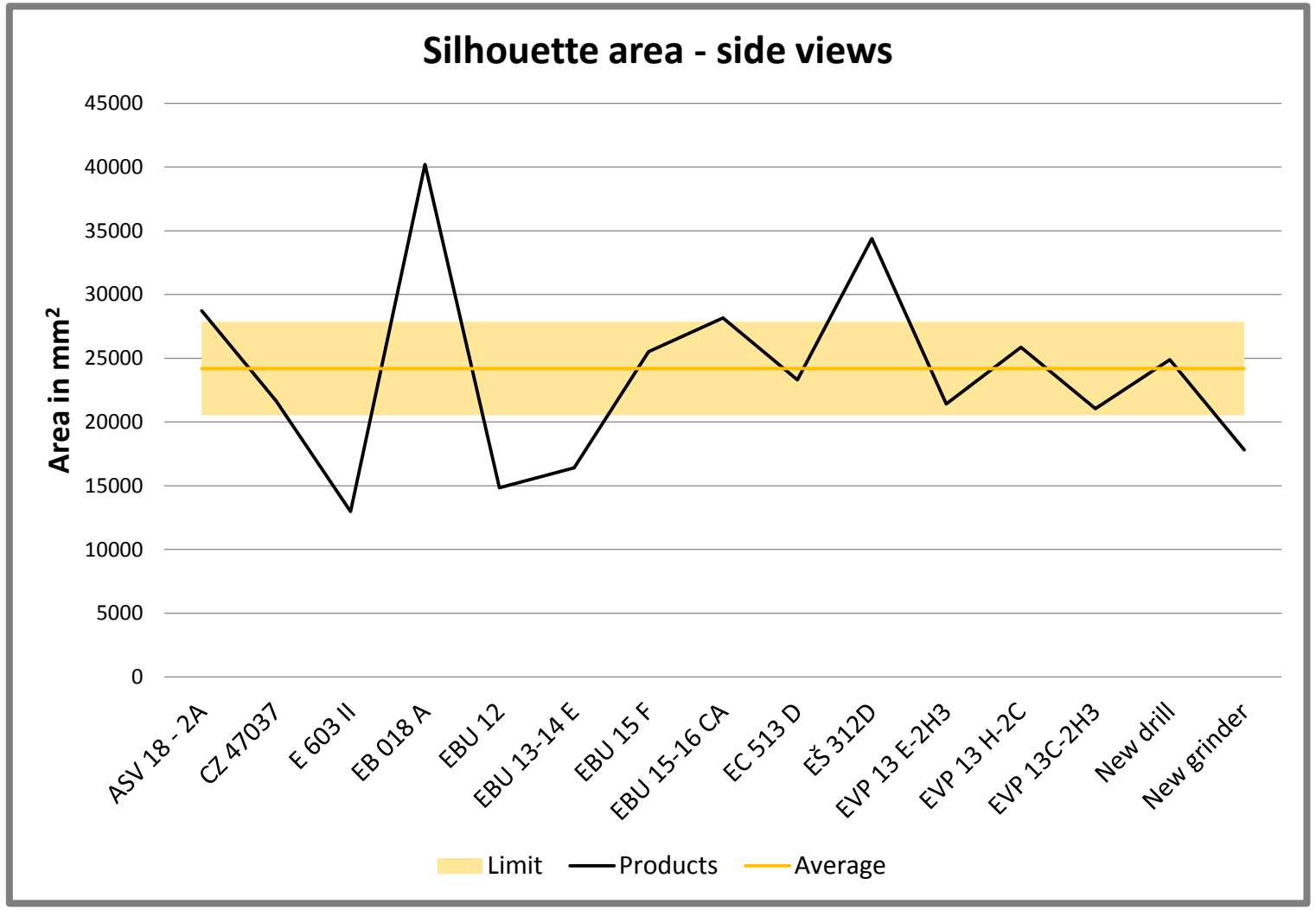
- Only logotype without blue , black background
- Blue and gray colour, with orange controls and black rubber parts

Proportion analysis

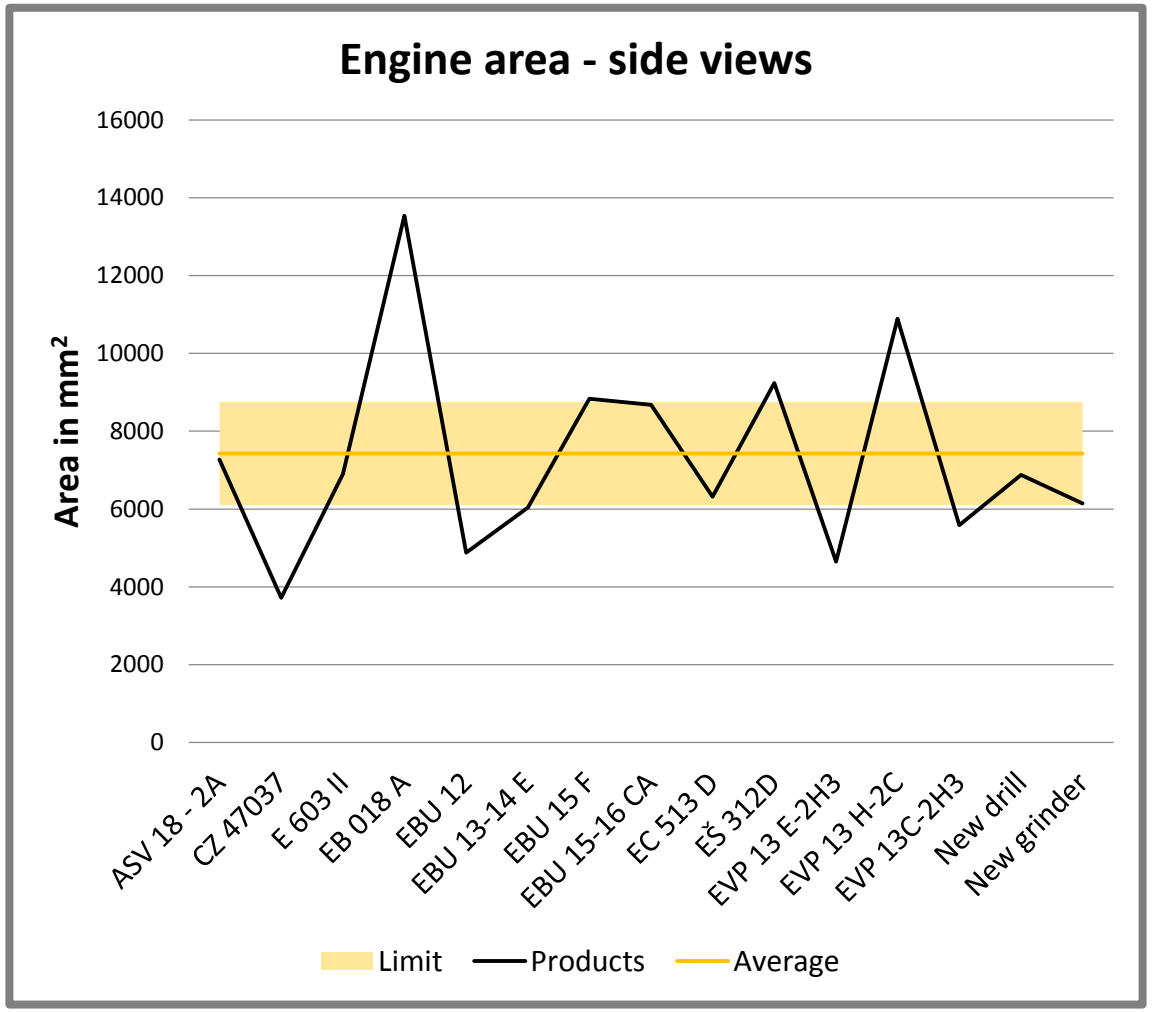
Outline proportions

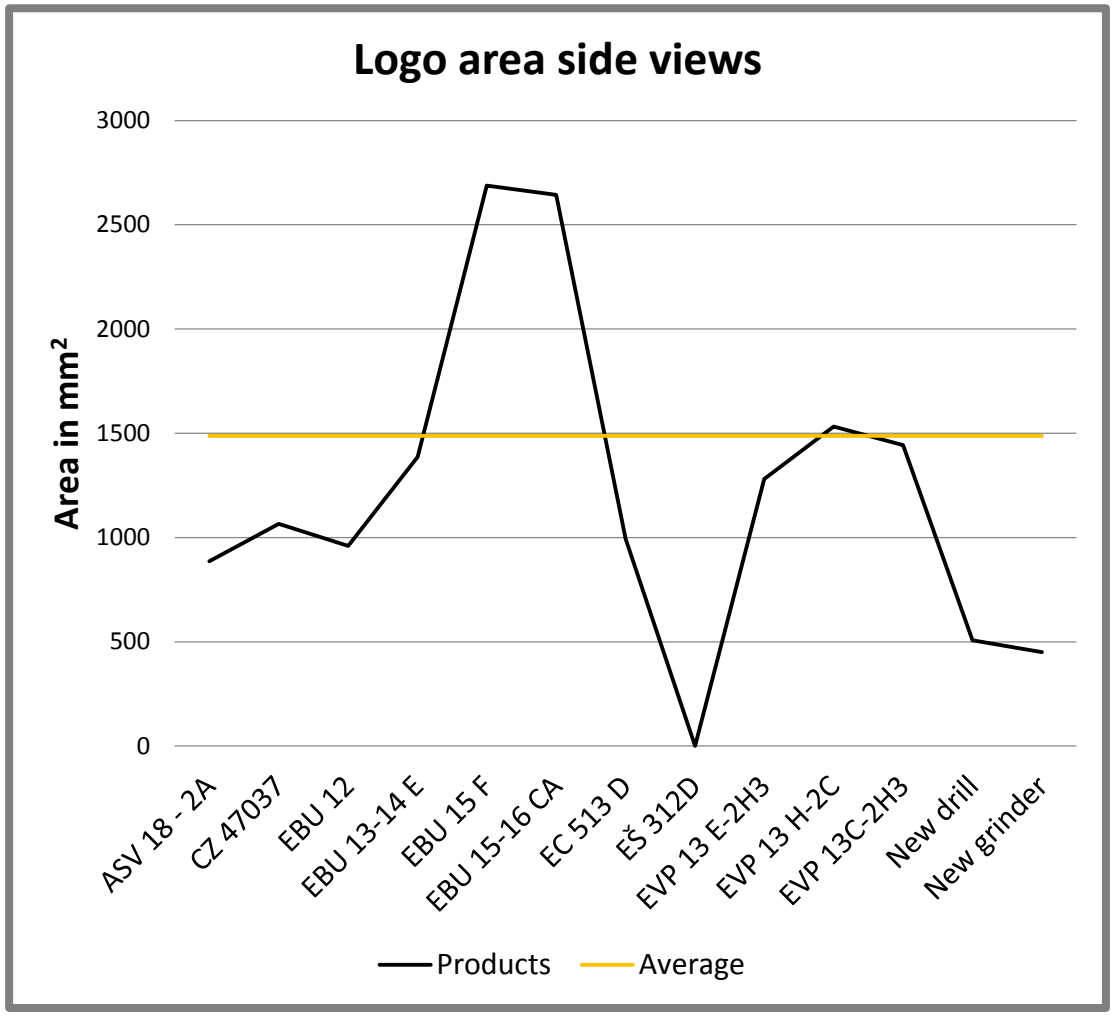
Using standard deviation as limit for the brand

Measuring areas of respective features

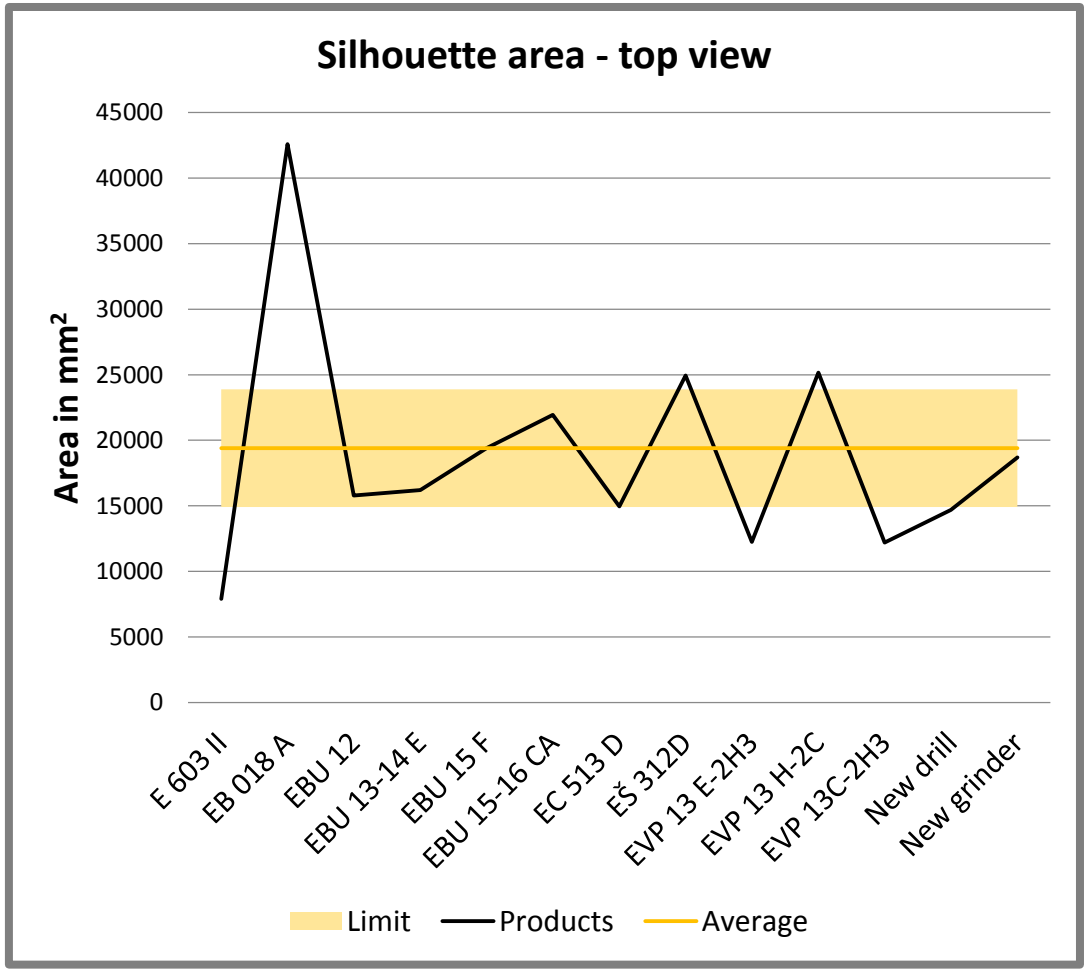


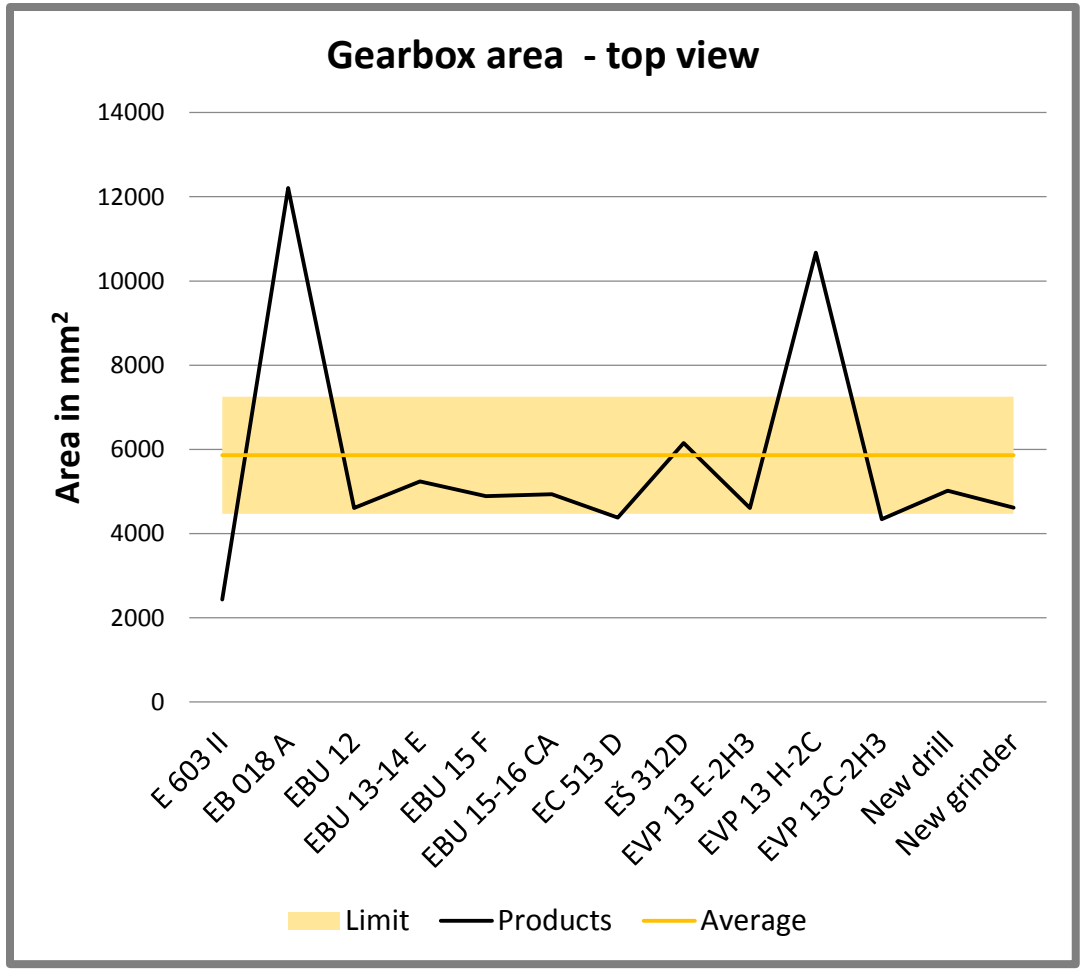
Proportion analysis





Proportion analysis





Concept vs the brand

Brand products

- Logo in rectangular format, blue background
- Blue and gray colour, with orange controls and black rubber parts
- No certain relation in proportion between analysed products

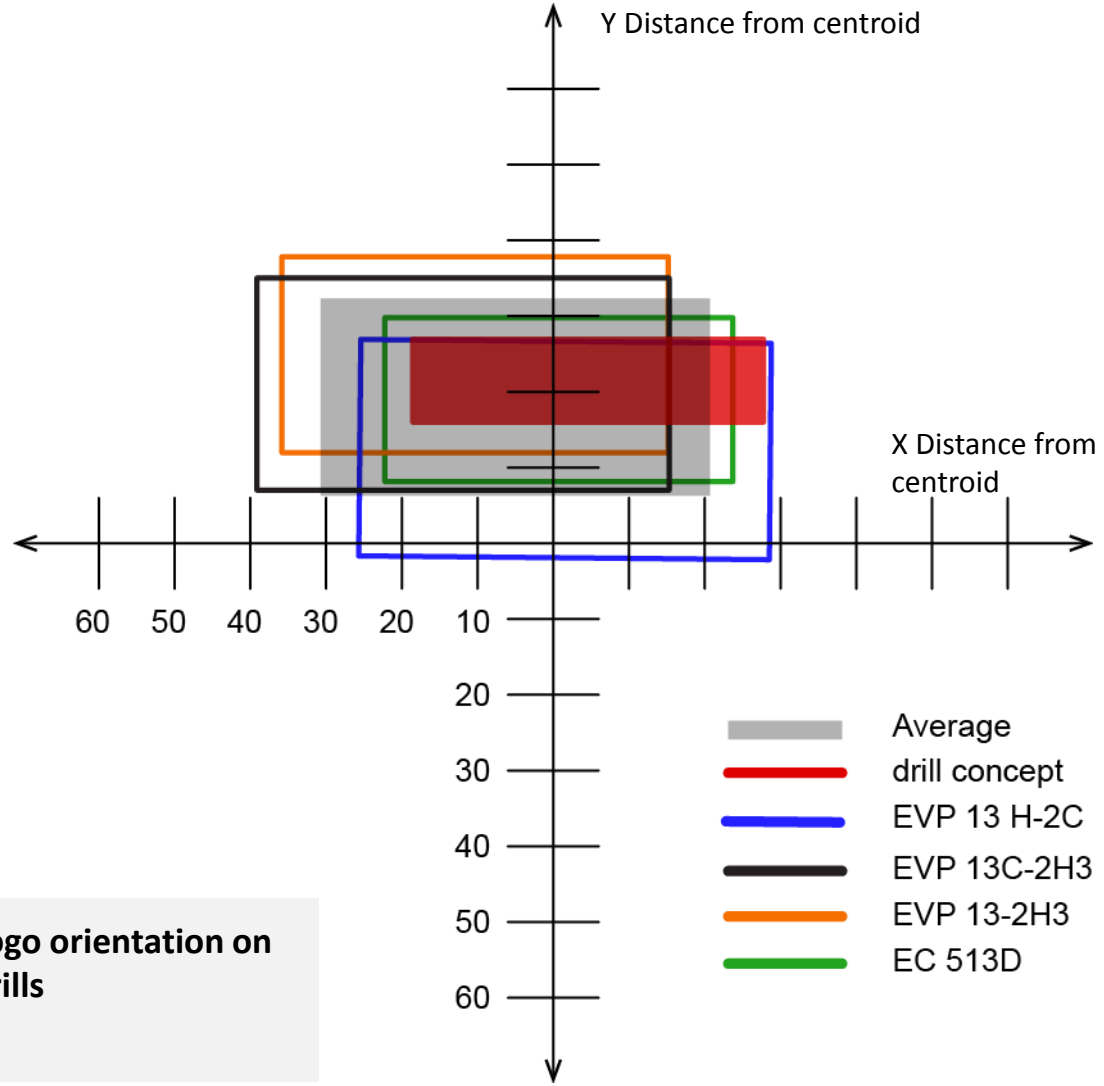
New concepts

- Only logotype without blue background
- Blue and gray colour, with orange controls and black rubber parts
- Similar proportions to last products in same segment

Orientation analysis

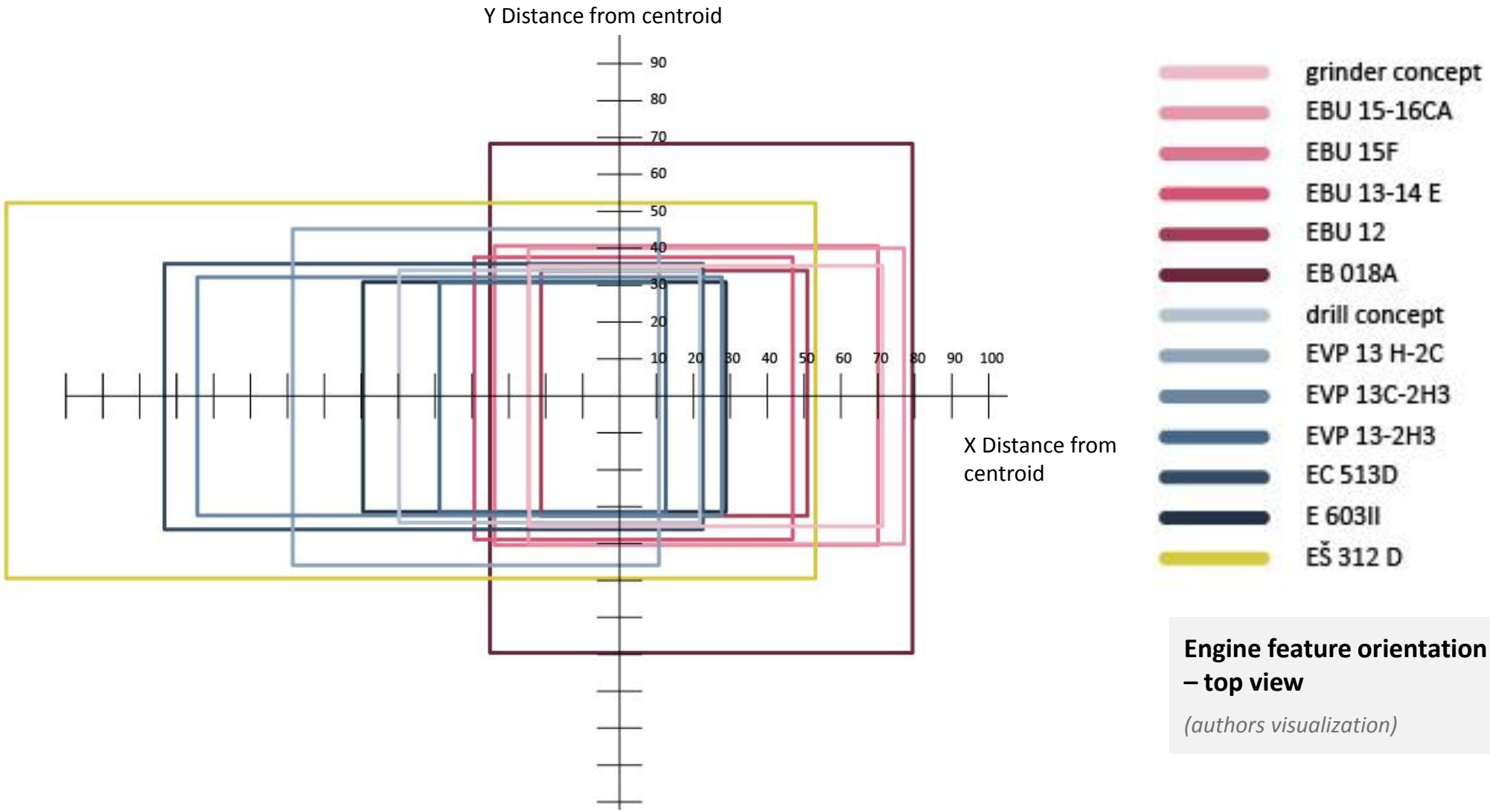
Serves for analysis of minimal and maximal distance of certain feature from outline centroid

Reflects mainly the construction and part positions between the products



Logo orientation on drills

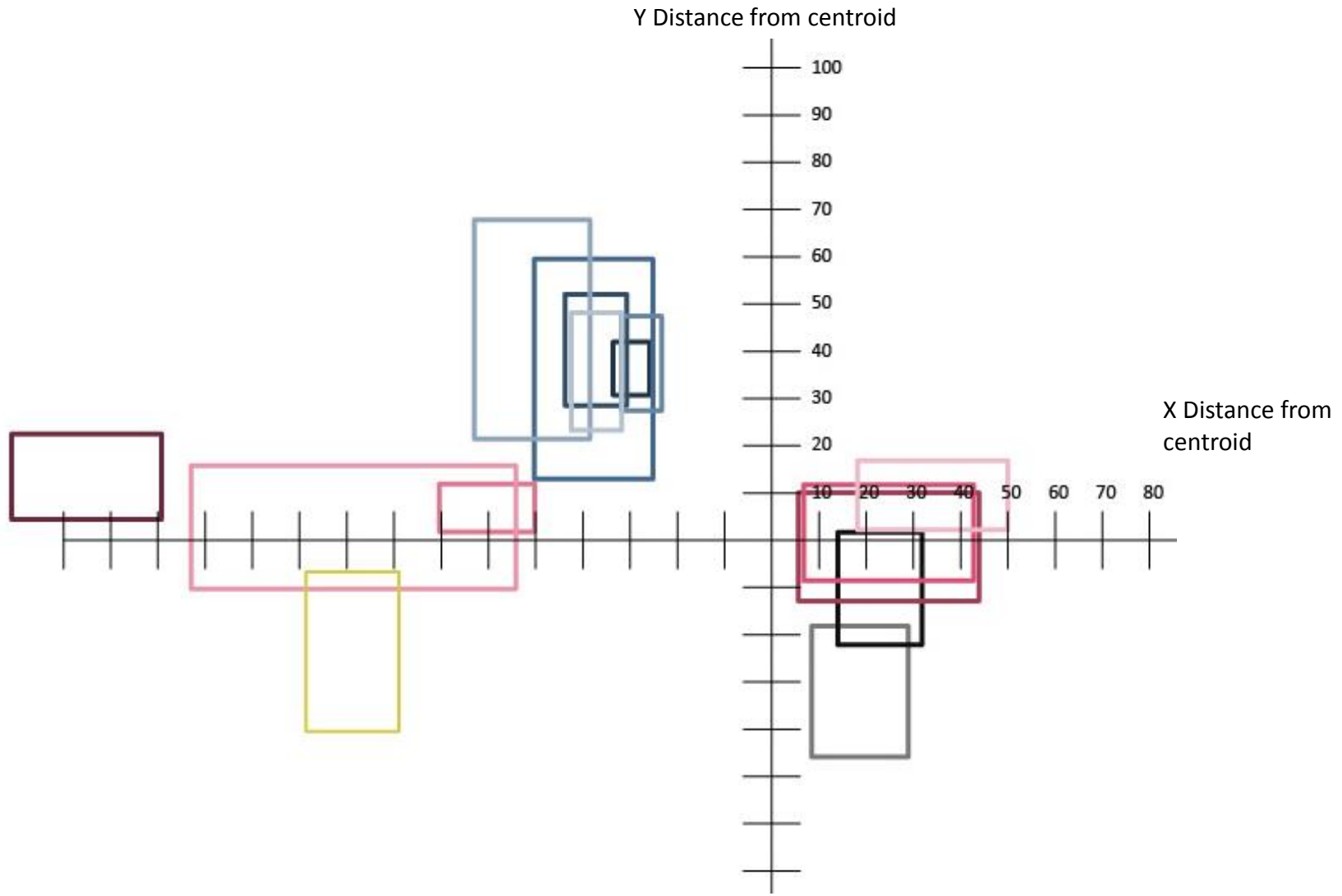
Orientation analysis



Engine feature orientation – top view

(authors visualization)

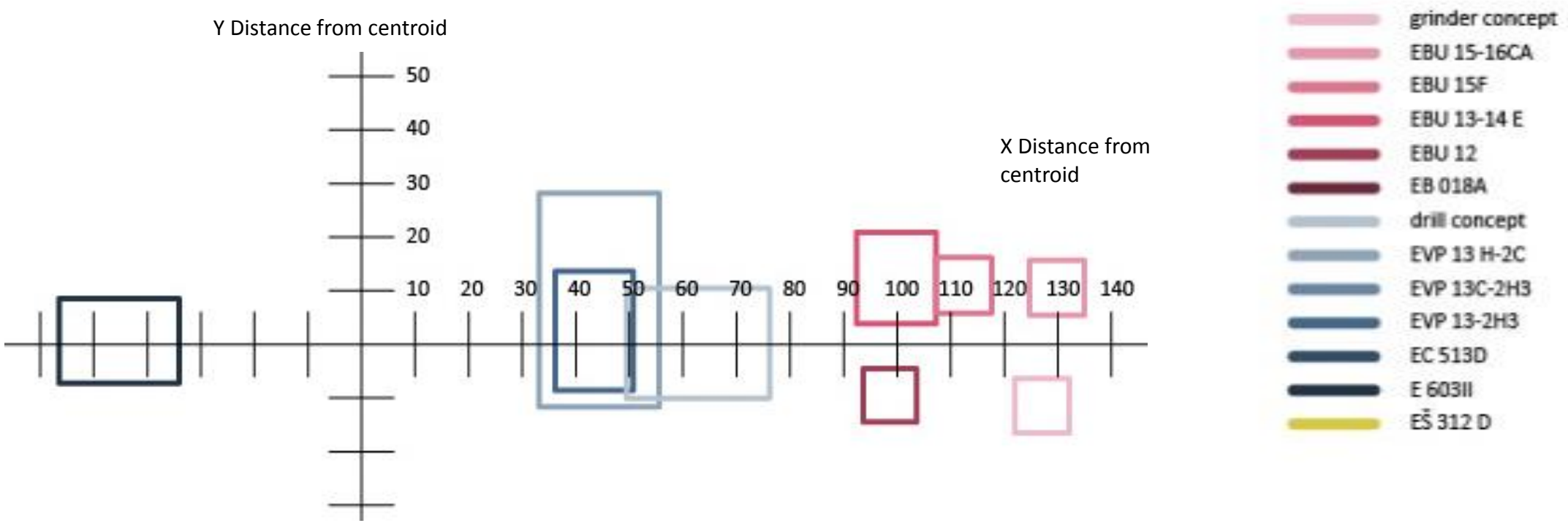
Orientation analysis



Control switch feature orientation, side view

(authors visualization)

Orientation analysis



Brake and speed buttons orientation, top view

(authors visualization)

Concept vs the brand

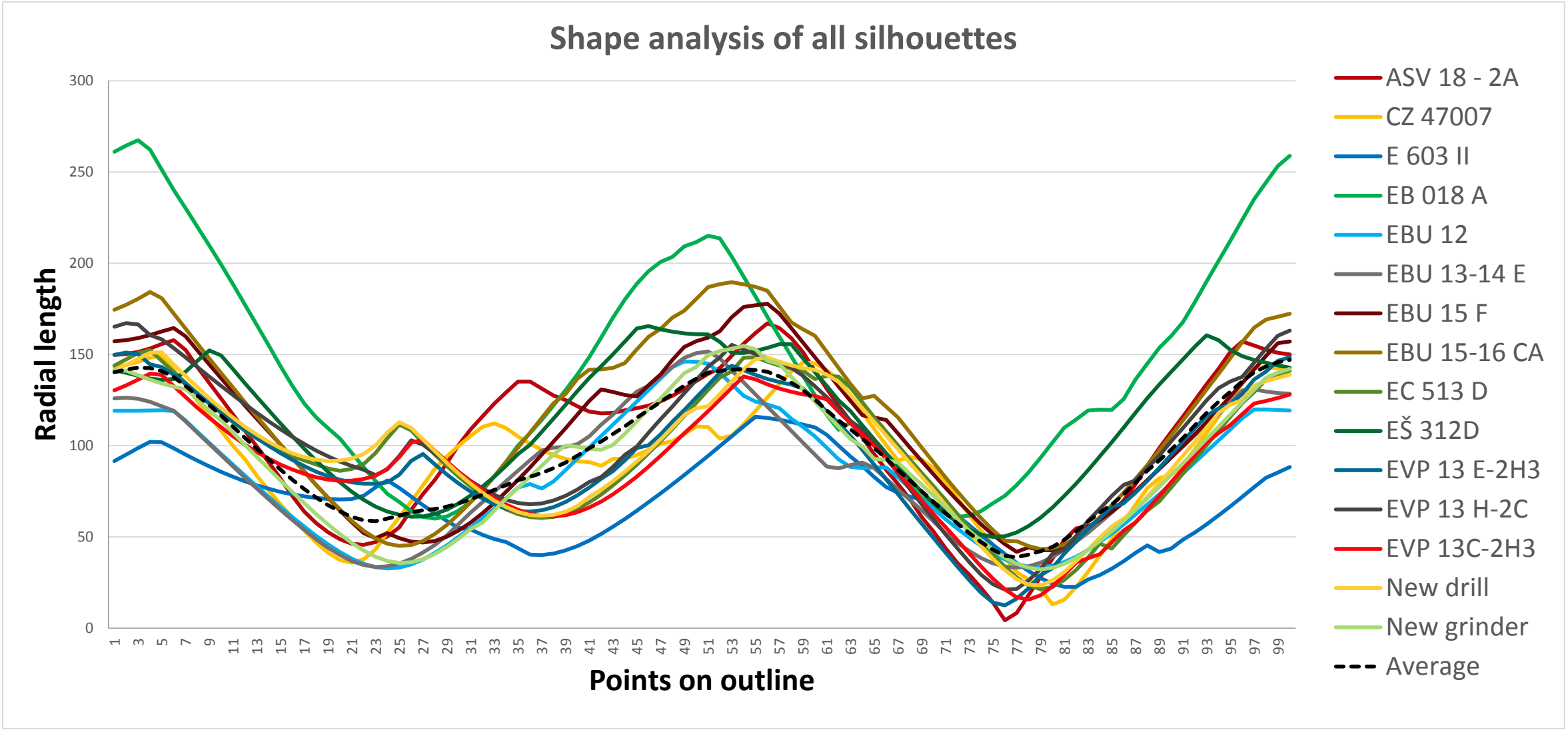
Brand products

- Logo in rectangular format, blue background
- Blue and gray colour, with orange controls and black rubber parts
- No certain relation in proportion between analysed products
- Orientation analysis show similar arrangement of parts. Brake buttons of grinders are placed inconsistently
- Better orientation similarity in drills/grinders category

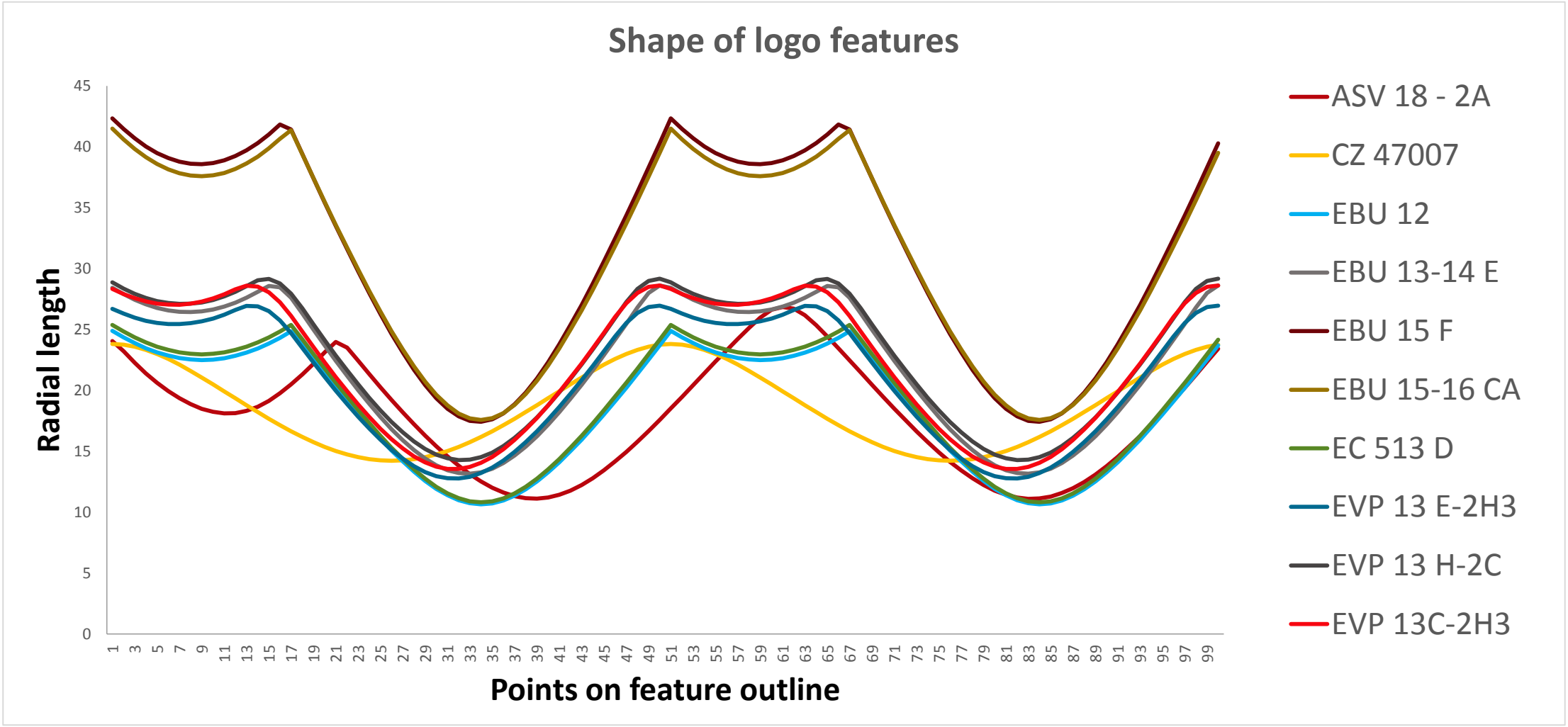
New concepts

- Only logotype without blue background
- Blue and gray colour, with orange controls and black rubber parts
- Similar proportions to last products in same segment
- Parts arranged similarly to existing products

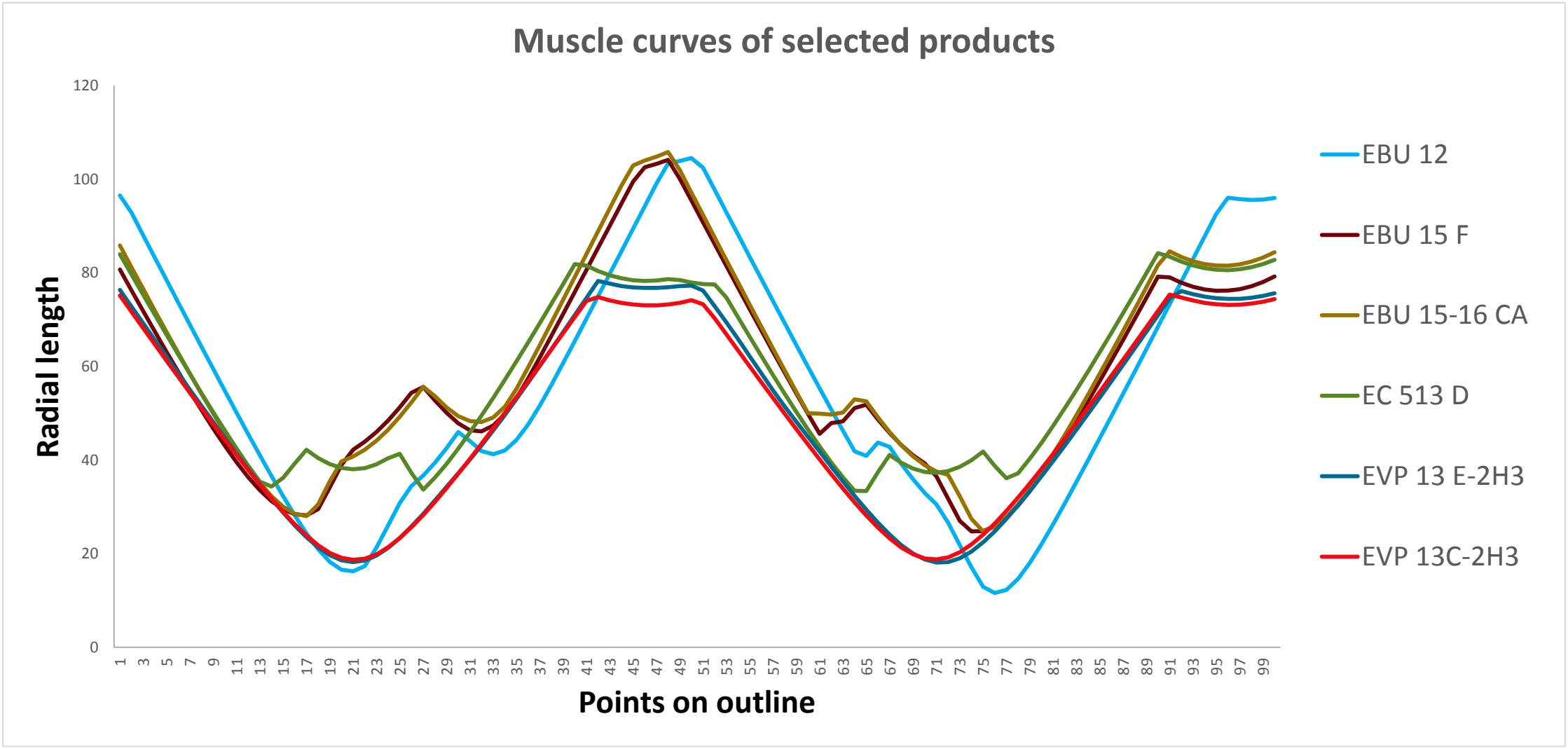
Shape analysis



Shape analysis

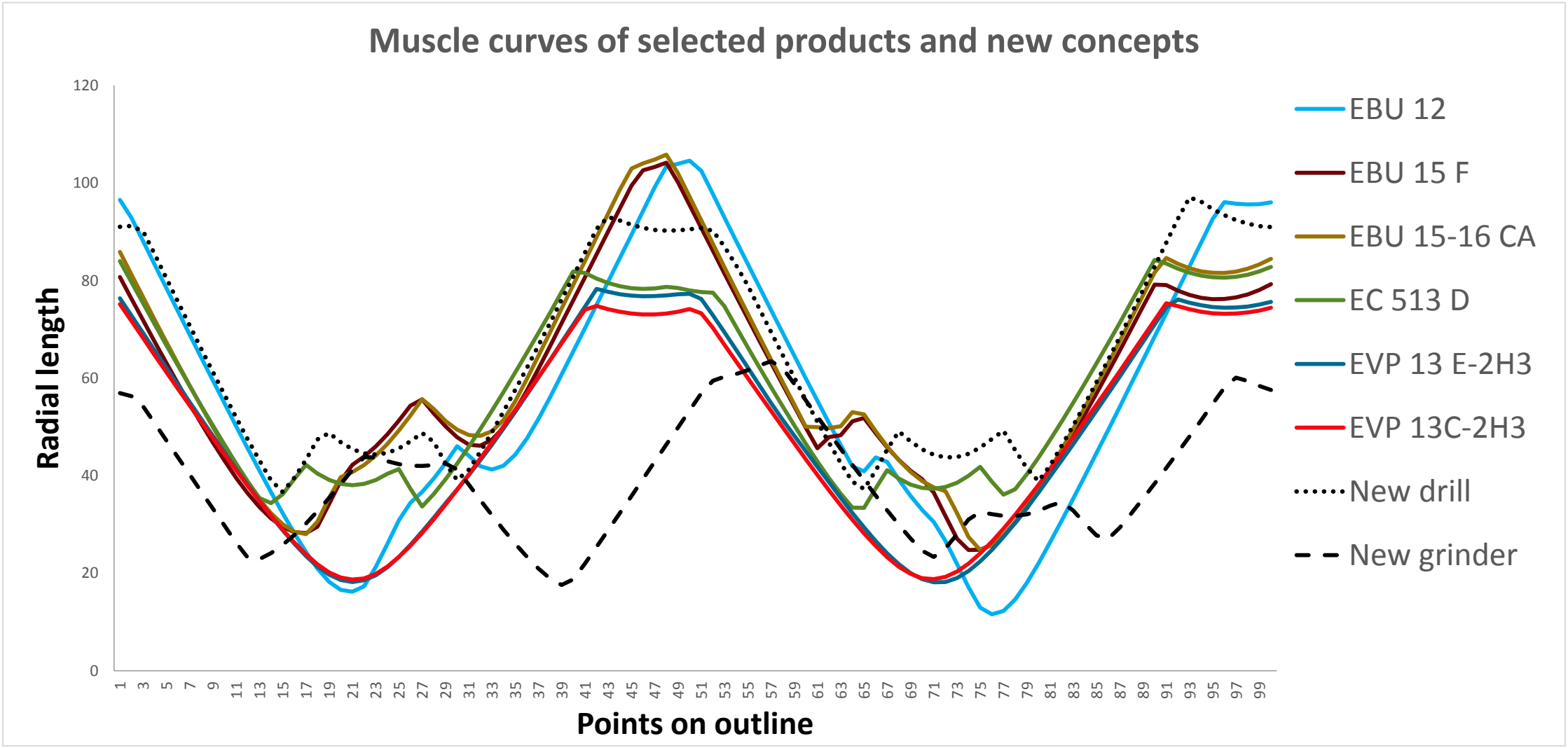


Shape analysis

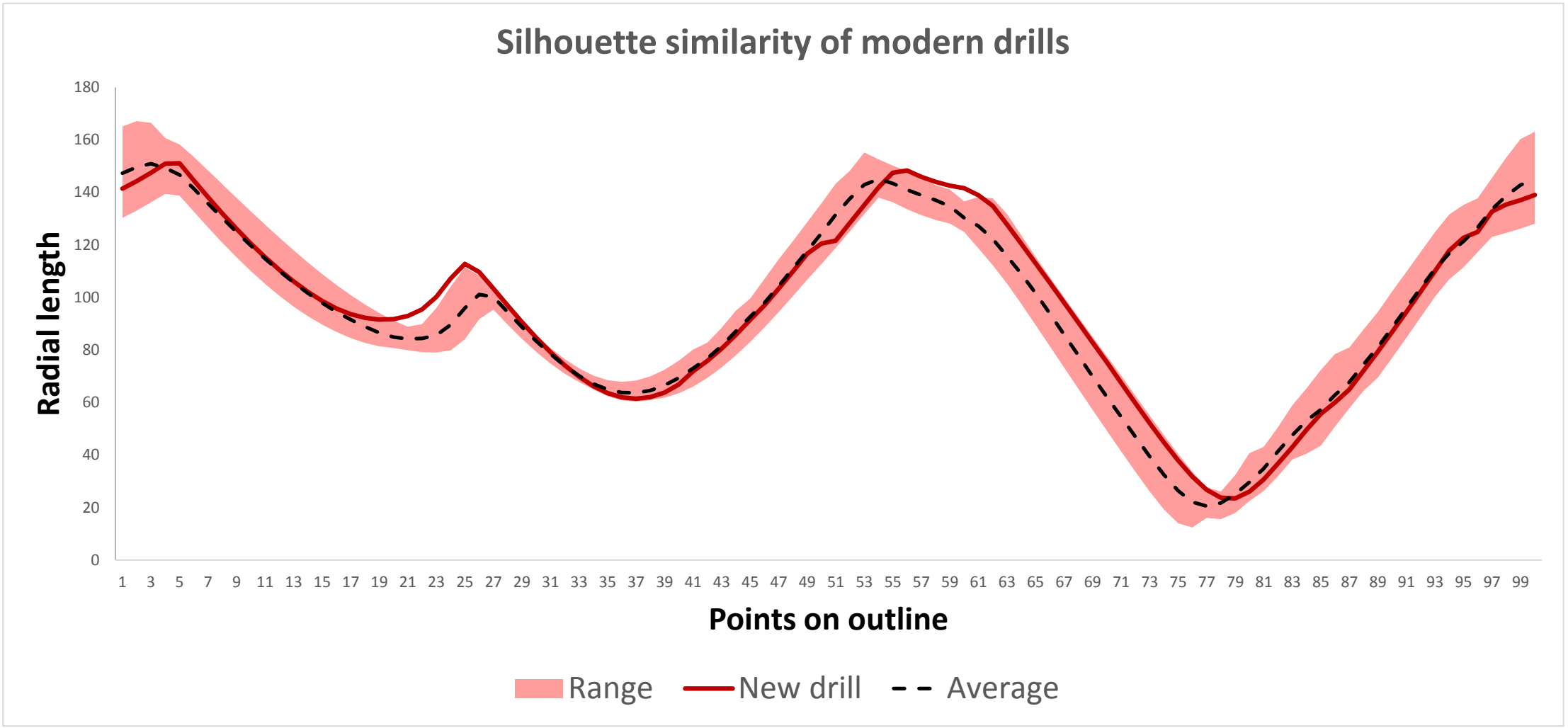


Shape analysis

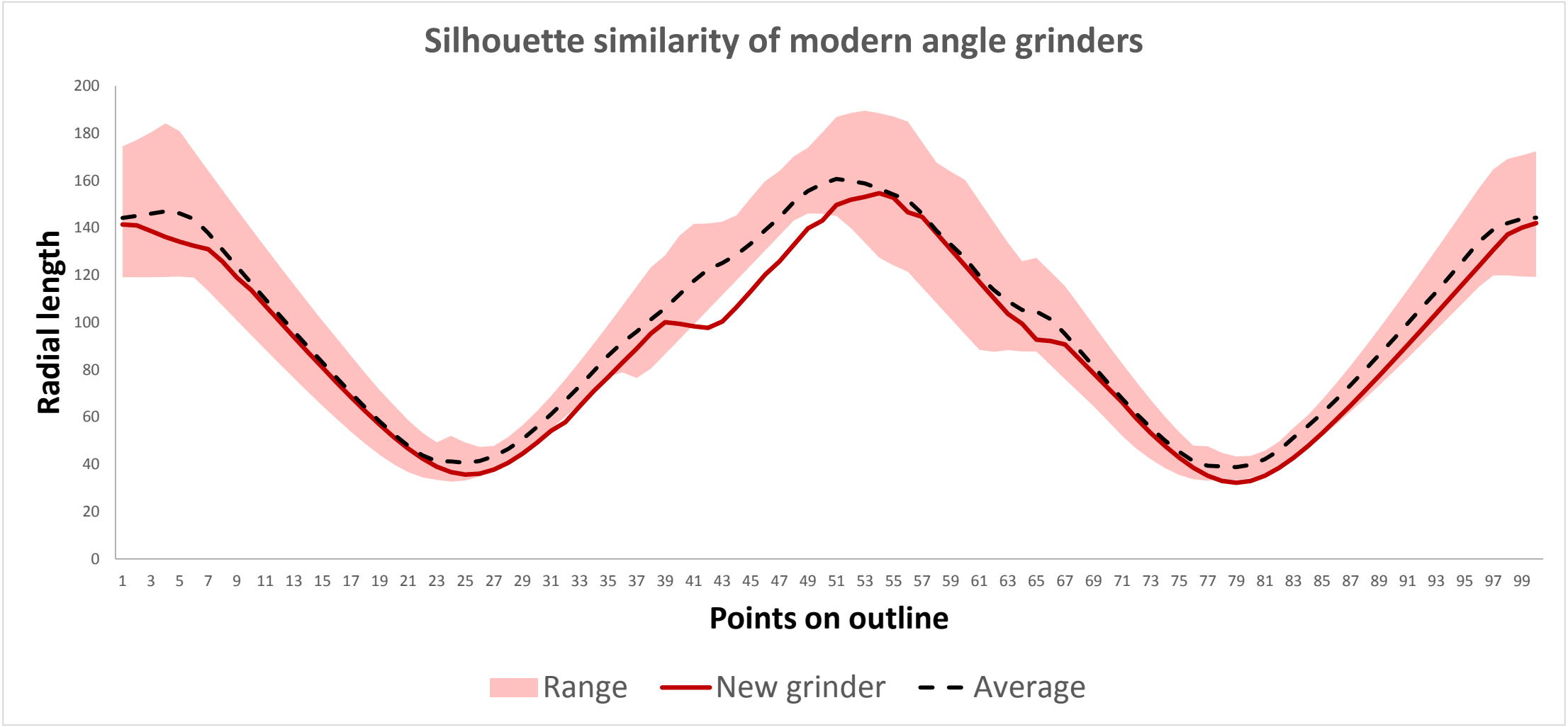
Shape analysis



Shape analysis



Shape analysis



Concept vs the brand

Brand products

- Logo in rectangular format, blue background
- Blue and gray colour, with orange controls and black rubber parts
- No certain relation in proportion between analysed products
- Orientation analysis show similar arrangement of parts. Brake buttons of grinders are placed inconsistently
- Better orientation similarity in drills/grinders category
- Shape similarities in logo feature and several other features (muscle curves)
- EVP 13H-2C deviating from other brand products

New concepts

- Only logotype without blue background
- Blue and gray colour, with orange controls and black rubber parts
- Similar proportions to last products in same segment
- Parts arranged similarly to existing products
- Concepts not similar in shape of logo feature
- Drill concept partly similar to muscle to EC513D
- In outline the new concepts are out of range of brand products in few areas

Degree of similarity

Similarity score of new drill concept

Degree of similarity	Silhouette	Gearbox	Engine	Handle	Muscle	Main switch	Logo	Venting
Proportion	0,409	0,053	0,003	0,424	0,971	0,355	1,496	0,167
Orientation (mean)	N/A	0,664	0,18	0,512	0,236	0,198	0,554	0,347
Shape (mean)	0,267	0,221	0,199	0,987	0,561	0,34	1,699	0,36
Average	0,338	0,312	0,127	0,641	0,589	0,297	1,25	0,291

Similarity score of new angle grinder concept

Degree of similarity	Silhouette	Gearbox	Engine	Handle	Muscle	Main switch	Logo	Venting
Proportion	0,256	0,215	0,244	0,302	0,421	0,186	0,187	0,85
Orientation (mean)	N/A	0,17	0,688	0,369	0,317	0,535	0,989	1,316
Shape (mean)	0,294	0,502	0,228	0,306	0,924	0,264	0,934	0,677
Average	0,338	0,312	0,127	0,641	0,589	0,297	1,25	0,291

Shape grammar

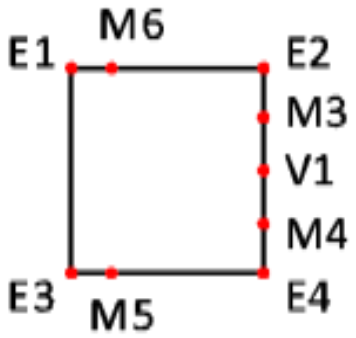
Generally

Shape grammar created for NAREX drills.

Consists of 57 rules

Can be enhanced by adding rules for grinders

Initial shape – engine, represented by rectangle with markers



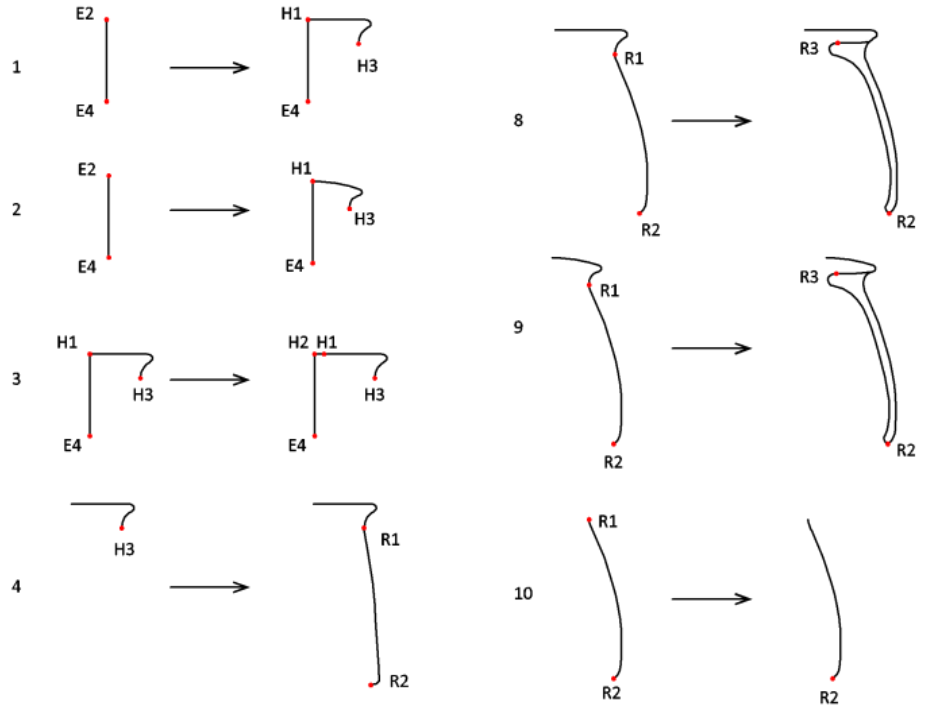
Initial shape with markers

Rules

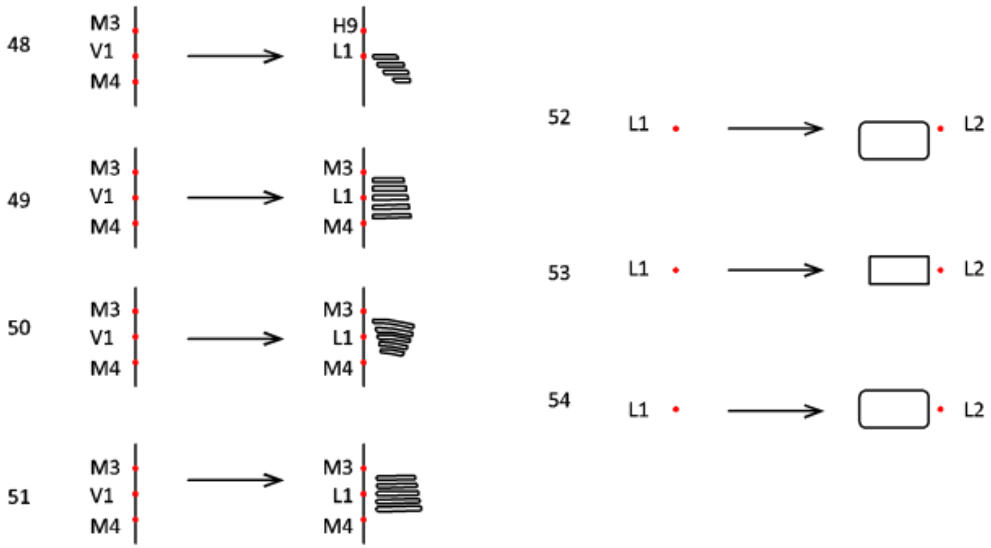
- Rules for back (1-10) and front of the handle (11-26)
- Rules for joining element (26-35) and gearbox (36-47)
- Rules for vents, logos (48-54) and muscles (55-57)

Shape grammar rules

Complete rules in thesis on pages 86-89



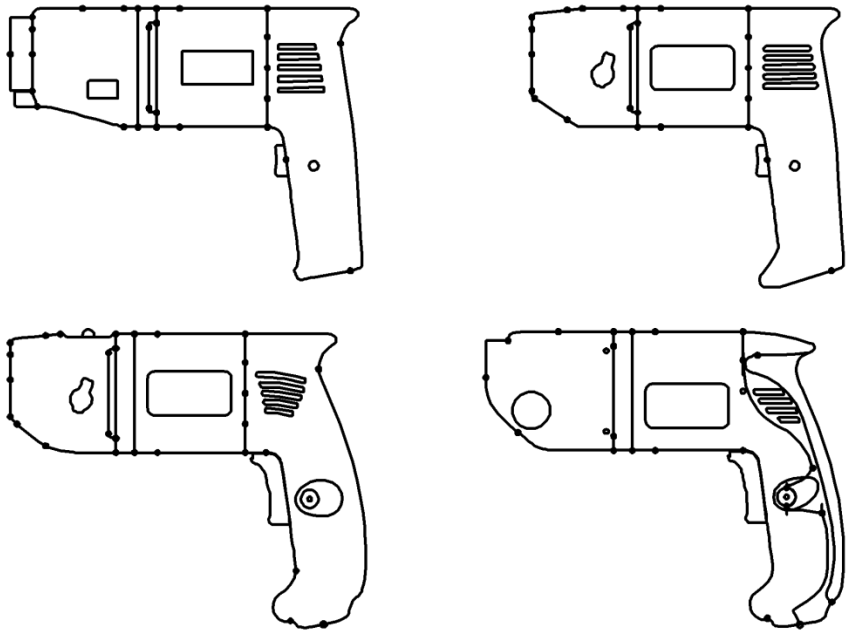
Rules for the back of the handle



Rules for ventilation and logo

Shape grammar verification

Verification has been conducted by generating all parental products.



Parental products generated with shape grammar

Left top – EC 513D, Right top - EVP 13-2H3

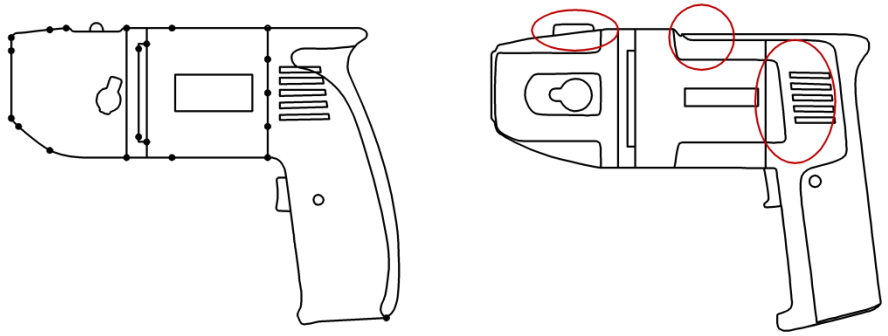
Left bottom – EVP 13E-2H3 , Right bottom - EVP 13H-2C

Table of rules shared and needed to generate parental products

Product	Rules needed	Shared rules with			
		EC 513D	EVP13C-2H3	EVP13E-2H3	EVP13 H-2C
EC513D	21	21	0	0	0
EVP 13C-2H3	19	10	9	0	0
EVP13E-2H3	20	3	5	12	0
EVP13 H-2C	24	4	0	5	15

Shape grammar concept building

- Generating manually to have concept principially similar
- Rules applied 1, 5, 8, 11, 16, 14, 20, 22, 27, 30, 33, 36, 45, 39, 40, 42, 49 and 54
- Muscle curves cannot be applied
- Switches, rubber backing can be generated
- Dissimilarities in gearbox switch, top and side of engine compartment



Places to be redesigned according to shape grammars

Left – generated concept

Right – decomposed concept with marked places

Discussion

Brand identity of NAREX

- The identity is refelected in products by consistent use of logo and 4 brand colours
- Furthemore it is bolstered by muscle curves at EC 513D, EBU 12, EBU 15F and EBU 15-16CA with derivated muscle curves on EVP 13E-2H3
- There cannot be a statement that a product produced by NAREX is not part of its identity, with exception of E603II (drill was in licensed manufacturing). - From this point of view the new concepts are not belonging to the brand
- Every idenity is less or more defined, degree of similarity can be a guide for this, perhaps even possible variable to measure Brand performance in design

Innovation of products within the identity

- Complex process driven by different needs than „just a new shape“
- Innovated design always used elements from past products but added several new – new concepts could belong to brand identity
- Hypothesis: Brand identity grammar + Innovation grammar = Innovated design
- This could help to adapt shape grammars to be a better tool for designer

Interview with Miloslav Šindler

Interview for further comparison of the designing process and description of the innovation

Interesting points from interview

- Opinion that there are no typical NAREX shape elements, and they fortunately weren‘t given to maintain for design
- Colours were given to maintain, as was the company label
- He does not take inspiration and neither have thought of designing elements that would be systematically kept along the product line

Clearly according to interview, the designing process is much more complicated that any previous research may show. Variables are making every product unique

Sketching took less than 2 months and it is hard to tell whether a shape grammar tool could speed up the process.

Examples of tools designed by Miloslav Šindler

Corded hammer – top

Corded drill - bottom

(Source: asociacedesigneru.cz)

Conclusion

Thesis achievements

- Gathered data and knowledge about brand identity
- Two concepts were designed without computer support for the study – similar to brand products
- NAREX brand identity was analysed for similarities with conclusion and recommendation for being more consistent
- NAREX drill shape grammar , made of 57 rules was designed
- Concepts were compared to see if they fall to brand identity and places for possible redesign were identified
- Conducted interview with Miloslav Šindler brought further insight

This work has brought a different point of view on studying how the innovation works in relation to shape grammar rules and similarity. It compared the actual designer's work and the shape grammars to find a hypothesis to make the shape grammars closer to the designers.

Thank you for attention

Martin Ondra
101172@vutbr.cz
martin.ondra87@gmail.com

http://**uk.fme.vutbr.cz/**

Institute of Machine and Industrial Design

References

[1] AAKER, D. a E. JOACHIMSTHALER Brand leadership. New York: Free Press, 2000. ISBN 0684839245

[2] OLINS, W. Corporate identity: making business strategy visible through design. Repr. London: Thames and Hudson, 1994. ISBN 0500278083

[3] KARJALAINEN, T. Strategic design language - transforming brand identity into product design elements. In: Proceedings of the 10th International Product development Management Conference. Bruxelles, 2003, s. 10-11

[4] KARJALAINEN, T.-M. a D. SNELDERS Designing Visual Recognition for the Brand*. Journal of Product Innovation Management [online]. 2010, 27(1), 6-22 [cit. 2016-07-27]. DOI: 10.1111/j.1540-5885.2009.00696.x. ISSN 07376782. Available on: http://doi.wiley.com/10.1111/j.1540-5885.2009.0069

[5] LABRECQUE, L. a G. MILNE Exciting red and competent blue: the importance of color in marketing. Journal of the Academy of Marketing Science [online]. 2012, 40(5), 711-727 [cit. 2016-05-26]. DOI: 10.1007/s11747-010-0245-y. ISSN 00920703. Available on: http://web.a.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=cebdfa23-1054-4b5e-8dc2-0fe82dbc9997%40sessionmgr4004&vid=0&hid=4204

[6] LABRECQUE, L. a G. MILNE To be or not to be different: Exploration of norms and benefits of color differentiation in the marketplace. Marketing Letters [online]. 2013, 24(2), 165-176 [cit. 2016-05-26]. DOI: 10.1007/s11002-012-9210-5. ISSN 09230645. Available on: http://web.a.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=8&sid=e1aa82b0-d423-4f8f-969d-03c67d40c41a%40sessionmgr4004&hid=4204

[7] RANSCOMBE, C., B. HICKS, G. MULLINEUX a B. SINGH Visually decomposing vehicle images: Exploring the influence of different aesthetic features on consumer perception of brand: Exploring the influence of different aesthetic features on consumer perception of brand. Design Studies. 2012, 33(4), 319-341. DOI: http://dx.doi.org/10.1016/j.destud.2011.06.006. ISSN 0142694x. Available on: http://www.sciencedirect.com/science/article/pii/S0142694X11000548

[8] RANSCOMBE, C., B. HICKS a G. MULLINEUX A method for exploring similarities and visual references to brand in the appearance of mature mass-market products. Design Studies. 2012, 33(5), 496-520. DOI: http://dx.doi.org/10.1016/j.destud.2012.04.001. ISSN 0142694x. Available on: http://www.sciencedirect.com/science/article/pii/S0142694X12000221

[9] STINY, G. Introduction to shape and shape grammars. Environment and Planning B: Planning and Design [online]. 1980, 7(3), 343-351 [cit. 2016-07-28]. DOI: 10.1068/b070343. ISSN 02658135. Available on: http://epb.sagepub.com/lookup/doi/10.1068/b070343

[10] AGARWAL, M a J CAGAN. A Blend of Different Tastes: The Language of Coffeemakers. Environment and Planning B: Planning and Design [online]. 1998, 25(2), 205-226 [cit. 2016-07-28]. DOI: 10.1068/b250205. ISSN 02658135. Available on: http://epb.sagepub.com/lookup/doi/10.1068/b250205

References

[11] PUGLIESE, M. a J. CAGAN Capturing a rebel: modeling the Harley-Davidson brand through a motorcycle shape grammar: modeling the Harley-Davidson brand through a motorcycle shape grammar. Research in Engineering Design. 2002, 13(3), 139-156. DOI: 10.1007/s00163-002-0013-1. ISSN 14356066. Available on: http://dx.doi.org/10.1007/s00163-002-0013-1

[12] MCCORMACK, J., J. CAGAN a C. VOGEL Speaking the Buick language: capturing, understanding, and exploring brand identity with shape grammars: capturing, understanding, and exploring brand identity with shape grammars. Design Studies. 2004, 25(1), 1-29. DOI: http://dx.doi.org/10.1016/S0142-694X(03)00023-1. ISSN 0142694x. Available on: http://www.sciencedirect.com/science/article/pii/S0142694X03000231

[13] ANG, Mei, Huai CHONG, Alison MCKAY a Kok NG. Capturing Mini Brand Using a Parametric Shape Grammar. Berlin, Heidelberg: Springer Berlin Heidelberg, 2011, s. 1-12. DOI: 10.1007/978-3-642-25200-6_1. ISBN 9783642252006. Available on: http://dx.doi.org/10.1007/978-3-642-25200-6_1

[14] ORSBORN, Seth, Jonathan CAGAN a Peter BOATWRIGHT. *Automating the Creation of Shape Grammar Rules*. Dordrecht: Springer Netherlands, 2008, s. 3-22. DOI: 10.1007/978-1-4020-8728-8_1. ISBN 9781402087288. Available on: http://dx.doi.org/10.1007/978-1-4020-8728-8_1

[15] PRATS, M., S. GARNER, I. JOWERS a C. EARL Improving Product Design via Shape Grammar tool. In: *International Design conference - Design 2004*. Dubrovnik, Croatia, 2004, s. 6

Question from review

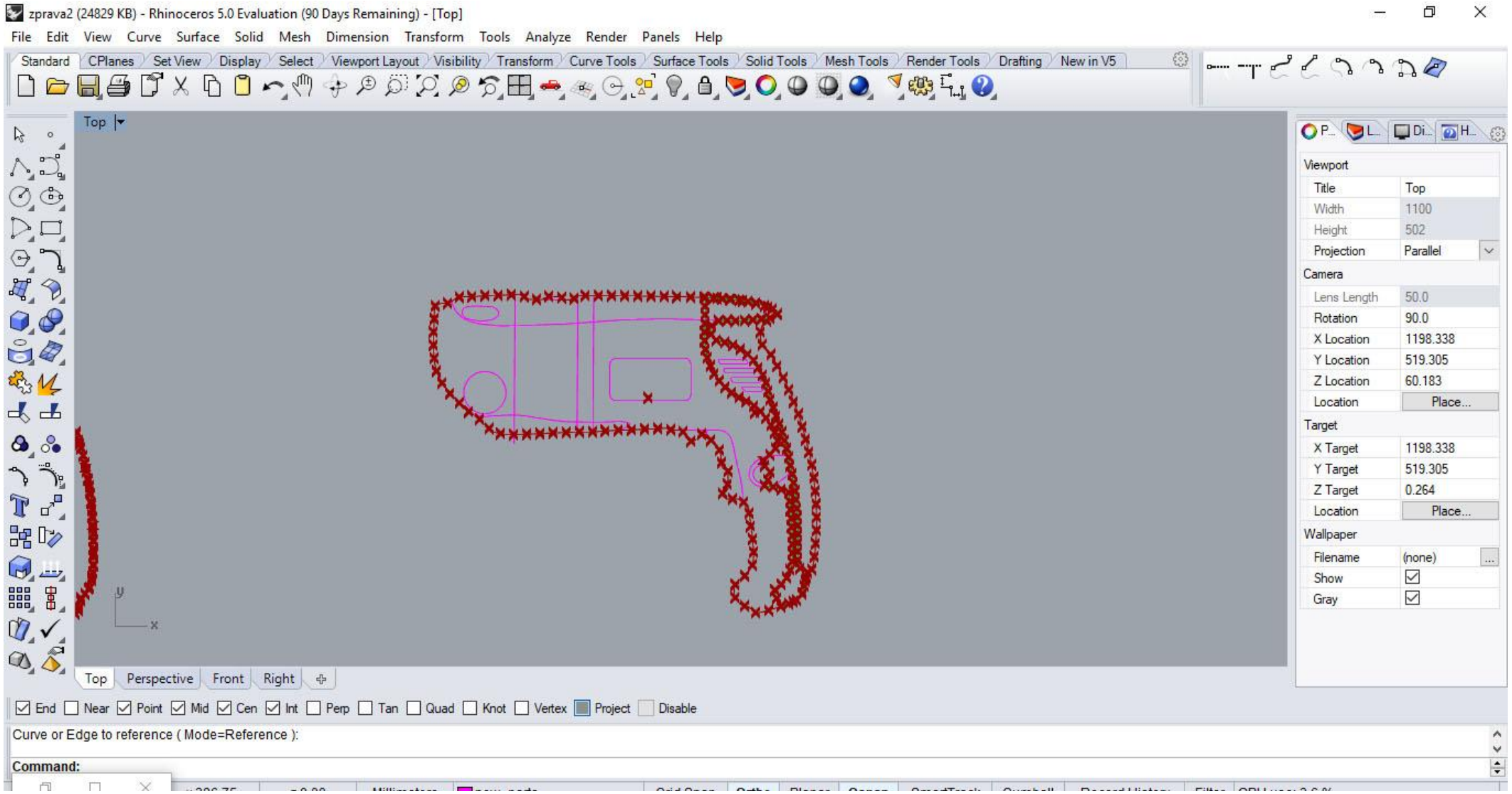
Is the old approach to the designing of designers based on the work of one designer - the master of his craft, using his intuition in the shape of similarity between the proposed items of one brand as effective as the new method which is presented by doctoral candidate in his work?

Depends on point of view. It is a tool that has its advantages and disadvantages.

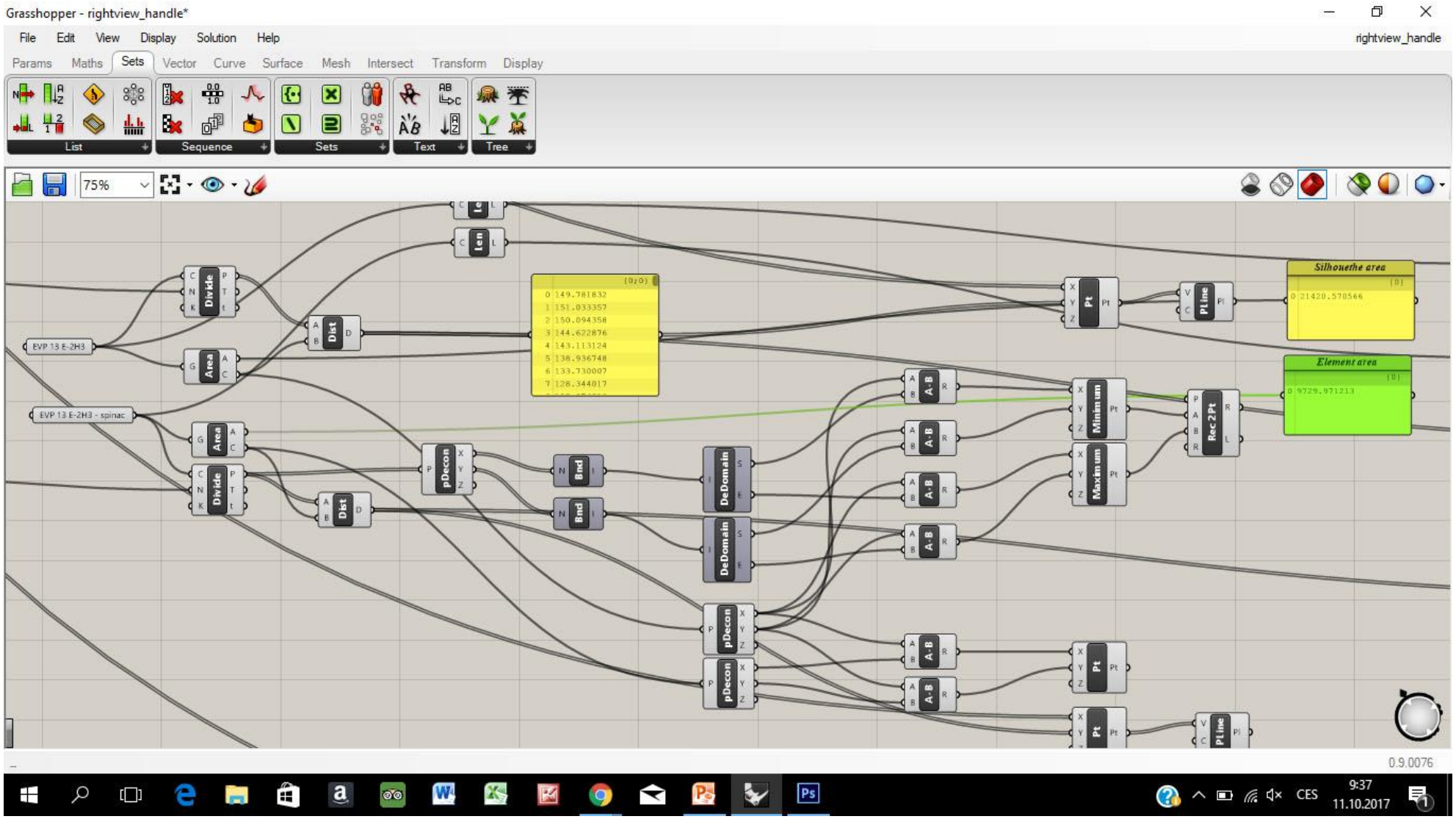
If the brand wishes to remain strict, it might be better for it to stay within rules and use computation tools when necessary. However, such approach may limit creativity and evolution of the brand. Computational methods that are available at this time cannot compete with superior creativity of master of the craft.

In the end its always up to the brand, what it wants to say with their design.

Question from review



Question from review



Question from review