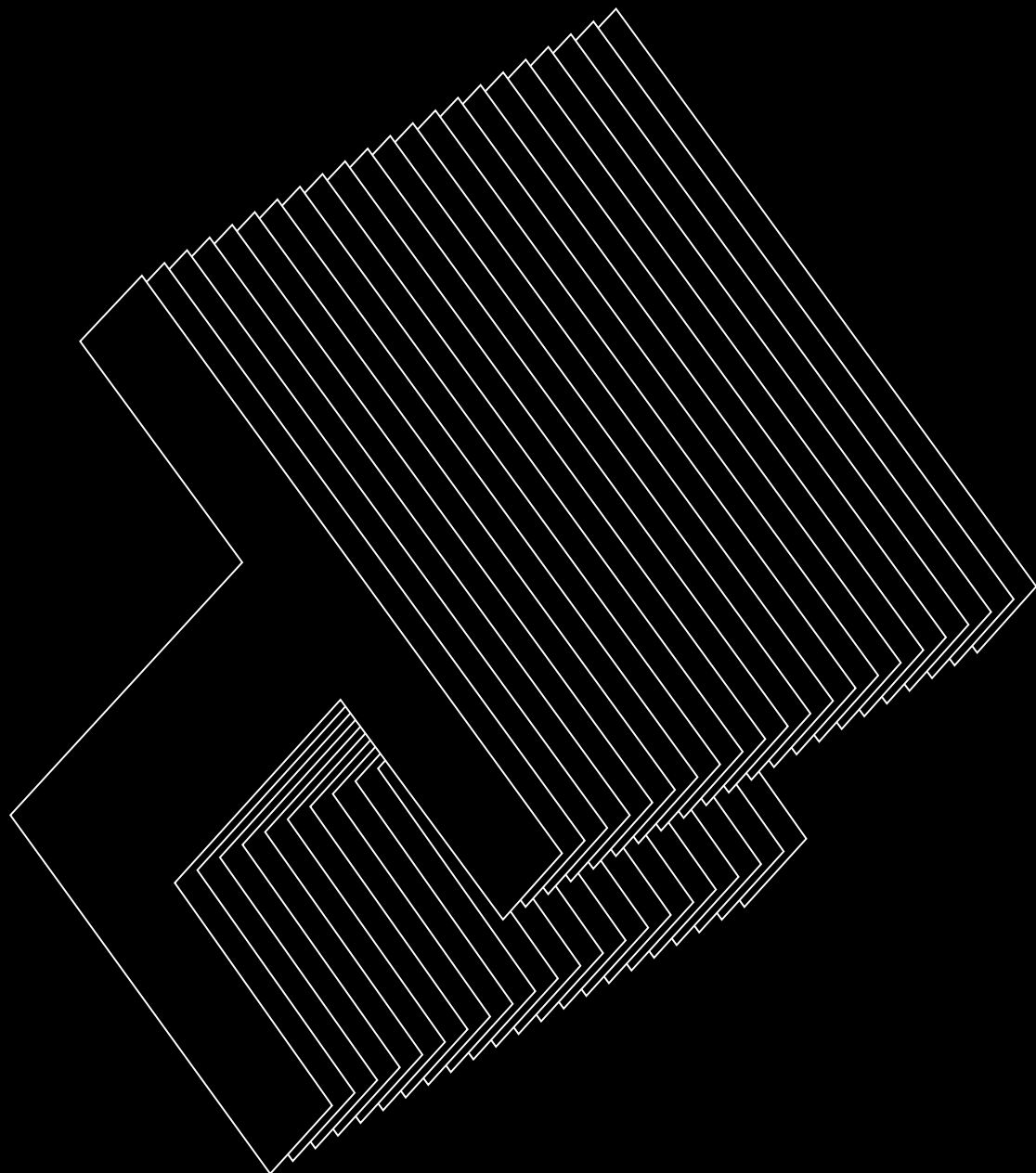


Prototyping Change
Doctoral design research
projects at FAD STU
in Bratislava



Prototyping Change
Doctoral design research
projects at FAD STU
in Bratislava

Michala Lipková

Table of Contents

- 06 Prototyping Change**
What are we talking about
when we talk about change?
- 18 Biophilia**
Design for poly-sensorial
biophilic experience by
Tibor Antony
- 28 Generative Design**
Rethinking linear workflows
by Matej Dubiš
- 38 Collaborative Craft**
Enabling serendipity by
community building and craft
by Martin Mjartan
- 48 Senseable Biomaterials**
Design-driven innovations
in biomaterials by
Vlasta Kubušová
- 58 Redefining Color Coating**
Color palette for
sustainable future by
Soňa Otiepková
- 68 Experience of Time**
Toolkit for experience
design and speculation
by Petra Hurai
- 78 References and Image Credits**

Prototyping Change

What are we talking about
when we talk about change?





The installation DESIGN × SCIENCE at Designblok '23 presents a curated selection of six exceptional doctoral design research projects from the Faculty of Architecture and Design at the Slovak University of Technology in Bratislava.

TR1MTAB.com is a communication and networking platform founded by Michala Lipková to actively seek new industry partnerships and accelerate design-driven technology transfer and multidisciplinary collaboration across (and beyond) STU's faculties.

The concept of functioning as a 'trimtab' is inspired by the American inventor Buckminster Fuller; he believed that small actions deliver global impact. Under the tagline Prototyping Change, the platform aims to contribute to systems-level change toward more sustainable and just futures.

DESIGN / CHANGE

Design has an extraordinary power to make ideas tangible. It allows us to experience abstract solutions through our senses and make them understandable through models, prototypes, and other visual clues. Also, for this reason, in today's world of 'wicked problems' (Buchanan, 1992), design as an output, a thinking and work process, or as a

strategy finds applications in a wide range of fields, far beyond the boundaries of its original professional classification, understood primarily in the context of the art disciplines.

As a result, the term design is used extensively in often significantly different con-

texts. We use the word design so frequently that it is nearly meaningless. Moreover, while another self-serving comparison of existing design definitions is the last thing we need, we must admit that our language no longer fits its purpose.

The bad news is that our understanding of the concept of design is far from the only thing that very soon needs to change in the face of accelerating 'polycrisis' (Lawrence et al., 2023).

Climate change is very well documented. As the team of researchers from Dark Matter Labs stated in their recent invitation paper on the new European Bauhaus economy, even our most ambitious pledges (IPCC, 2023) lead to climate disaster (Kemp et al., 2022). The authors argue that "apart from design and creativity, our new reality could require new ethics, governance, institutions, accounting regimes, regenerative investments, smart services and systems." The collective sees exploration of "what is emerging at the intersection of the material and immaterial" and "establishing new relationships between tangible and intangible assets" as one of the ways ahead to support the shift towards a regenerative future for our built environment (Johar, 2023).

One thought repeatedly comes to the forefront in the global transition design discourse: only a radical worldview and behavior shift — on the individual, institutional, and organizational level — can lead to the necessary scale of transformation.

How can doctoral design research become a laboratory for the emerging design practice that does not seek minor adjustments to the existing system but is capable of reimagining and transforming it? Which research questions are worth asking, and what kind of design research can contribute to the transition to a future we actually want? How can design enable and accelerate cross-sectoral dialog?

By being both a creative and a pragmatic action-driven profession, design can practically contribute to the change in how manufacturers, entrepreneurs, researchers, scholars (and any other stakeholders) think and work together towards common goals. Using a couple of examples, design research can be useful in providing critical points of

view, identifying the one problem to solve by a single project in a given time, and dividing large challenges into smaller, actionable steps. Design naturally brings an iterative mindset, creative curiosity, and collaboration.

We do not pretend to have all the answers, but one thing is clear: The scale of the problems we face requires paradigm-oriented design methods, and we need to speed up learning how to use them together. Such a need has led us to create a platform that allows the accumulation of collective intelligence and facilitates collective action. In the situation when we have a lot to lose by not trying, accelerating collaboration offers an actionable way to go.

DESIGN > PROTOTYPING

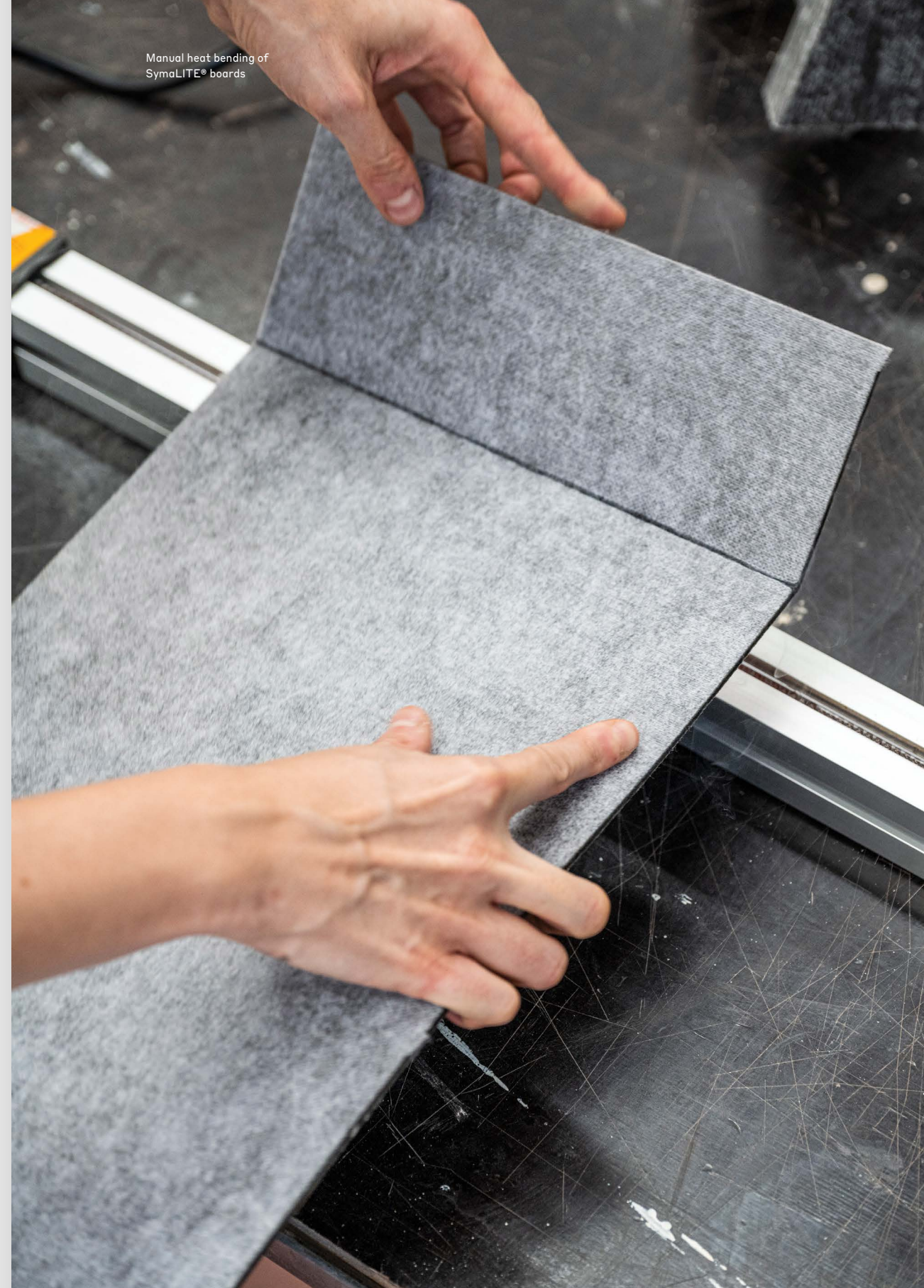
Buckminster Fuller has inspired generations of architects and designers even though he did not receive formal architectural or design training. Scholarly sources refer to Fuller using countless adjectives: architect, system theorist, writer, designer, inventor, futurist, or philosopher — reminiscent of the contemporary concept of 'antidisciplinarity' (Ito, 2014).

Contemporary media is rediscovering Fuller's concept of being a 'trim tab' — the legendary metaphor of a ship's miniature rudder. A small part that can influence a large system (Fuller, 1962) inspires young people to reshape their immediate surroundings actively. In today's reality, which can easily induce helplessness, the idea of being a 'trim tab' resonates even more.

Fuller's concept of acting as a 'trim tab' inspired the name of the recently founded platform for design research and technology transfer at the STU in Bratislava. Built on the belief that small actions deliver global impact, the platform promotes the idea of design-driven innovation under the motto of Prototyping Change. This communication and networking platform aims to actively seek new industry partnerships and accelerate collaboration across STU's faculties.

Another of the many famous (overquoted but still inspiring) thoughts by Buckminster Fuller tells us never to try changing things by fighting the existing reality, advis-

Manual heat bending of SymaLITE® boards





Installation DESIGN x SCIENCE
at the The Trade Fair Palace
during Designblok 2023 in Prague

“Contemporary media is rediscovering Fuller’s concept of being a ‘trim tab’ — the legendary metaphor of a ship’s miniature rudder. A small part that can influence a large system (Fuller, 1962) inspires young people to reshape their immediate surroundings actively. ”

ing us to “build a new model that makes the existing model obsolete” (Sieden, 2011, 358). Fuller himself was a tireless maker, using experiments and business activities to test and develop his ideas in the real world — be it a radical view of low-cost housing or his unconventional vision of energy-efficient car.

British designer Pascal Wicht compares the act of prototyping during the design process to “creating hypotheses that can continually be shaped and refined” (Wicht, 2023). The emphasis on ‘prototyping’ within the platform’s communication strategy is intentional. By intentionally avoiding using the term ‘design’ at the forefront of the narrative, we switch attention to design as a process — a research activity to test ideas, a process to learn from, rather than supporting the idea of producing polished artifacts.

Under the tagline Prototyping Change, the platform aims to contribute to systems-level change step by step. We have replaced the subject “I” in the name of the ‘tr1mtab.com’ URL with the number “1” to emphasize the importance of a single step if taken in the right direction.

Prototyping Change refers to design’s ability to bridge disciplines and help innovative ideas ascend across the ladder of technol-

ogy readiness levels by producing tangible outputs of research processes that are otherwise hard to comprehend from the outside and challenging to communicate to potential partners. When we use the term ‘technology transfer’, we refer to the big picture and the general notion of transferring results from scientific research or technological inventions from academic environments to business applications — beyond the formal processes of IP registration of patents or utility models.

DESIGN x SCIENCE

The curatorial selection of six doctoral research projects in the study program Design at the Faculty of Architecture and Design, Slovak University of Technology in Bratislava (FAD STU) represents a retrospective of successfully defended dissertation projects, which were in the making after 2014 or are still ongoing. However, much more than that: The selection reflects an undeniable generational shift on the one hand, and the other, it illustrates trajectories of ongoing transition. All projects bring their own view of the new position of the designer - be it a role in a multidisciplinary scientific team, entrepreneurial endeavor, creative community, territory of philosophy, or computationally enhanced product development.

“Under the tagline Prototyping Change, the platform aims to contribute to systems-level change step by step. We have replaced the subject “I” in the name of the ‘tr1mtab.com’ URL with the number “1” to emphasize the importance of a single step if taken in the right direction.”

The current study program Design at the FAD STU stems from an industrial design agenda originally developed at the Faculty of Mechanical Engineering three decades ago. Early understanding of industrial design at STU saw the discipline as a strictly form-oriented, convergent view of design practice, comparable to the Danish Design Ladder model's first step of “design as styling” (Kretzschmar, 2003). While the executive profession of industrial design styling is no doubt still needed and should not be underrated, the current strategy of STU's Institute of Design and FAD supports a diversity of approaches to design creation in its full spectrum of formal outputs, understanding design as a “first and foremost a thinking process” (Rams, 1995, 152).

The biggest opportunity we currently recognize is the focus on strategic and systemic positions of design. Therefore, at FAD STU, we aim to elevate local doctoral design research as an opportunity for an ‘upgrade’ towards interdisciplinary and cross-sectoral collaboration, focused on supporting technology transfer by design-driven innovation. At the forum of Prague's Designblok, we illustrate our vision with six tangible examples.

The installation DESIGN x SCIENCE is a result of a collective effort. The production team of doctoral students and graduates worked hard to find the best way to frame messages of complex research projects attractively and comprehensively. The installation's title was first mentioned in a group

discussion by Petra Hurai, coming up from a collective brainstorming about choosing the right message for the show - one suitable for arguably a short attention span of mass design fair visitors. We use the mathematical sign of multiplication between the words ‘design’ and ‘science’ to represent the metaphorical amplification that design can offer for different fields of science and research.

Each of the presented projects bridges disciplines differently. Tibor Antony dives into insights from chemistry and psychology, developing an exemplary integration of natural and engineering sciences for an ambitious biotech startup. Petra Hurai provides actionable critical reflection stemming from cross-sectional problems of time, exploring philosophy, physics, biology, cognitive psychology, neuroscience, and other disciplines. Matej Dubiš brings a detailed insight into possible integrations of computational tools into human-centered product development. Vlasta Kubušová challenges cross-disciplinary material research in bio-based materials with their future applications and environmental effects in mind. Martin Mjartan has become a ‘trimtab’ of the creative community, aiming to develop a resilient platform for collaboration between academia, creative industries, and disappearing crafts. Soňa Otiepková spotlights surface coloring as an ignored problem of material science from the perspective of commercial scalability of industrial applications of bioplastics.

Installation DESIGN x SCIENCE
at the The Trade Fair Palace
during Designblok 2023 in Prague



The installation concept DESIGN x SCIENCE started to be formed even before the final technical details of the six selected doctoral research projects on display were specified. The authors of the installation design, František Dorko and Martin Sombathy, agreed to participate in developing a modular exhibition display, potentially usable in the future for other occasions.

Experimental prototyping of the exhibition display became part of their ongoing research in circular design. The design research project initiated by Martin Sombathy maps sources of locally available residual material from industrial production in Slovakia that are not being reused or recycled for various reasons. The goal of Sombathy's mapping is to discover the opportunities to close open loops of local industrial production by product design.

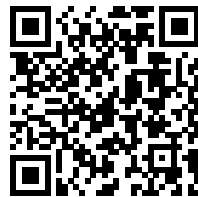
The installation uses SymaLITE® boards provided by Mitsubishi Chemical Group. SymaLITE® is recycled low-weight reinforced thermoplastic used for producing three-dimensional components utilizing low-pressure molding, finding multiple applications in the automotive industry such as car undershields, engine and gearbox covers, etc. (Mitsubishi, 2023). While the material life cycle is designed to reuse the scrap edge trims, the production cycles exceptionally leave local subcontractors with extra boards in stock with minor imperfections that fall outside of the acceptable production tolerance limits. Trying to avoid unnecessary recycling of unused industrial intermediate products, Dorko and Sombathy

were looking for possible applications in small series production. The DESIGN x SCIENCE installation display became one of these design opportunities.

The modular display system, used for the first time in the DESIGN x SCIENCE installation, works exclusively with locally available resources. The system uses heat-bent spare SymaLITE® as the main display surface. The construction is made of beech wood rods, connected by custom 3D printed PLA components and standard bolts and nuts inspired by joints used in construction scaffolding. Each part of the exhibition system is replaceable and fully demountable, allowing for future adaptation, reuse, or recycling.

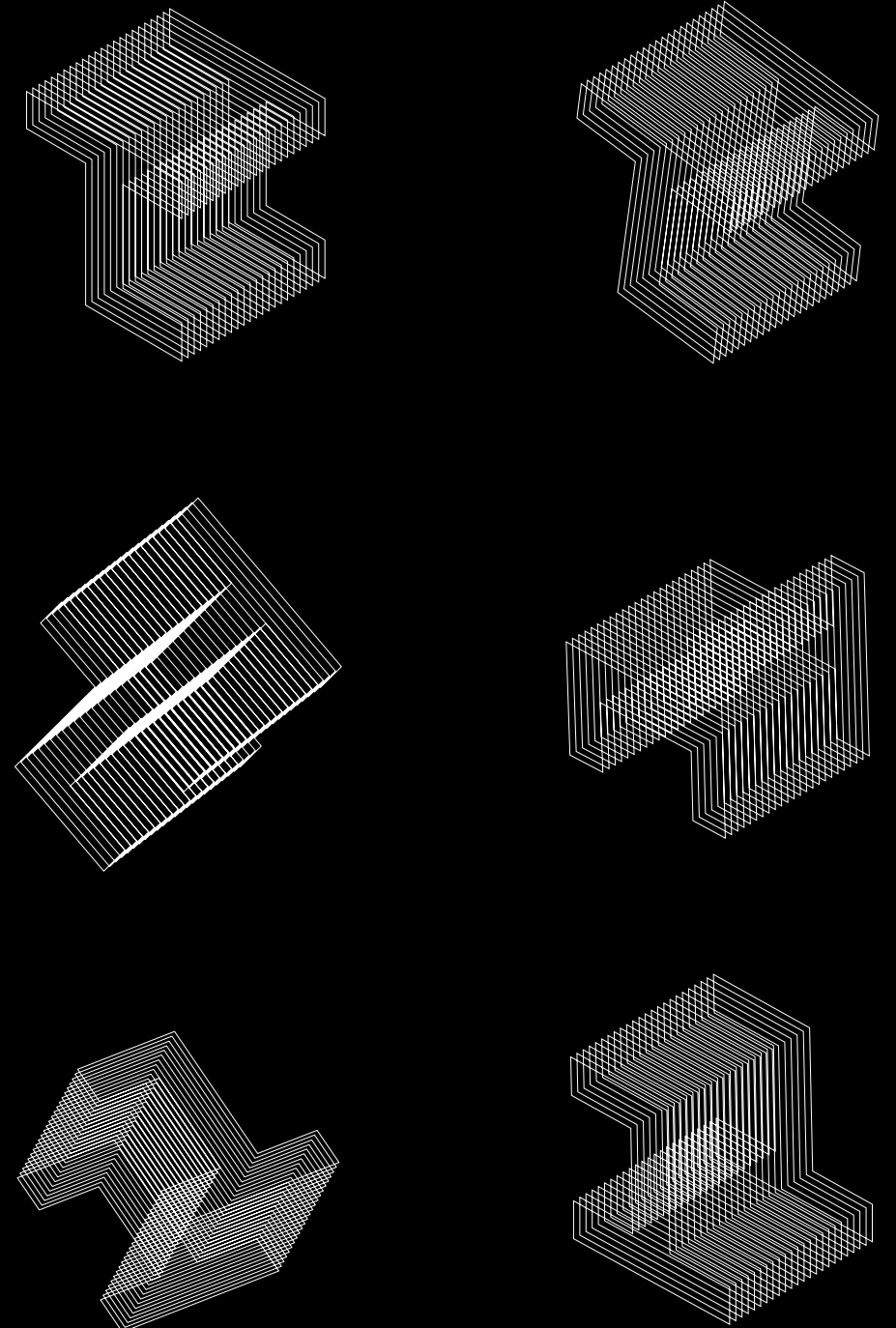
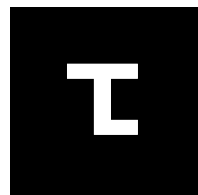
The installation DESIGN x SCIENCE, presented at the 25th edition of Prague International Design Festival Designblok, is the first group presentation of doctoral design research projects from FAD STU abroad.

In other words, it is itself a prototype. Let us give the format a chance to open an ongoing conversation and become an invitation to collaborate!



Trimtab | Prototyping Change
www.tr1mtab.com

Trimtab is a platform for design-driven technology transfer and multidisciplinary collaboration at the Slovak University of Technology in Bratislava. Founded by Michala Lipková, the platform seeks opportunities to prototype innovative solutions with positive impact and bring added value to the production loop.



Spatial transformation of the double meaning symbol T/1, present in the logotype of the Trimtab platform

References & Image credits

Prototyping Change by Michala Lipková

BUCHANAN, Richard, 1992. Wicked Problems in Design Thinking. In Design Issues. Vol. 8, no. 2, pp. 5-21. <https://doi.org/10.2307/1511637> [cited 8.12.2021]

FULLER, Richard Buckminster, 1962. Education Automation. Comprehensive Learning from Emergent Humanity. Bremen: Lars Müller Publishers, 1962. Cited from the Czech translation: FULLER, Richard Buckminster, 2014. O vzdělání. Kounice: MOX NOX. 223 s. ISBN: 978-80-905064-5-9.

IPCC - The Intergovernmental Panel on Climate Change. 2023. AR6 Synthesis Report, Climate Change 2023. Available online: <https://www.ipcc.ch/report/sixth-assessment-report-cycle/> [cited 10.9.2023]

Kemp, L., Xu, Ch., Depledge, J., Ebi, K. L., Gibbins, G., Kohler, T.A., Rockström, J., Scheffer, M., Schellnhuber, H.J., Steffen, W., Lenton, T.M. 2022. Climate Endgame: Exploring catastrophic climate change scenarios. In Proceedings Of The National Academy Of Sciences (PNAS). Available online: <https://doi.org/10.1073/pnas.210814611> [cited 10.9.2023]

ITO, Joi, 2014. Antidisciplinary. <https://doi.org/10.31859/20141002.1939>. Available online: <https://joi.ito.com/weblog/2014/10/02/antidisciplinar.html> [cited 10.9.2023]

JOHAR, I., Stancic, I., Harris, E., Engle, J., Lorenz M., Burgess, O., Zaidi, Z. 2023. Invitation Paper: A New European Bauhaus Economy, Designing Our Futures. Dark Matter Labs. Available online: <https://www.irresistiblecircularsociety.eu/news/invitation-paper-a-new-european-bauhaus-economy-designing-our-futures> [cited 10.9.2023]

KRETZSCHMAR, Anders, 2003. The economic effects of design. National Agency for Enterprise and Housing, Copenhagen: Denmark.

LAWRENCE, Homer-Dixon, Janzwood, Rockstrom et al, 2023. Global polycrisis: The causal mechanisms of crisis entanglement. Available online: <https://ssrn.com/abstract=4483556>. [cited 10.9.2023]

MITSUBISHI Chemical Group of companies. 2023. SymaLITE®. Low-weight reinforced thermoplastic. Available online: <https://www.mcam.com/en/products/composites/glass-fiber/symalite> [cited 10.9.2023]

MONTREAL DESIGN DECLARATION. Montréal World Design Summit, 24. 10. 2017, Montréal. http://www.designdeclaration.org/wp-content/uploads/2019/01/Montreal_Design_Declaration_2017_WEB.pdf [cited 8.12.2021]

PITKÄNEN, Antti et al. Design ROI - Measurable Design. In Issuu.com [online]. Design ROI Research Project, 2012. [Cit. 24.1.2021]. Dostupné z: https://issuu.com/anttipitkanen/docs/droi_measurabledesign_2012_issuu_en

RAMS, Dieter, 1995. Weniger, aber besser. Less but more. Berlin: Gestalten. 154 p. ISBN 978-3-89955-525-7.

SIEDEN, L. Steven, 2011. A Fuller View - Buckminster Fuller's Vision of Hope and Abundance for all. Divine Arts Media. ISBN 10: 1611250099.

SIMON, Herbert Alexander, 1969. The Sciences of the Artificial. Cambridge: MIT Press. 248 p. ISBN 9780262193740.

WICHT, Pascal, 2023. In Whispers and Giants. Available online: <https://www.whispersandgiants.com/about/> [cited 10.9.2023]

Biophilia by Tibor Antony

ANTONY, Tibor, 2022. Biotechnology of Spirulina in Design: Sustainable Food Production in Urban Interiors. In The International Journal Of Designed Objects, Volume 16, Issue 1, pp 79-96. ISSN: 2325-1395. Available online: <https://doi.org/10.18848/2325-1379/CGP/v16i01/79-96>

DIMOSTHENIS, A. Sarigiannis. 2013. Combined or Multiple Exposure to Health Stressors in Indoor Built Environments. World Health Organization. Available online: https://www.euro.who.int/__data/assets/pdf_file/0020/248600/Combined-or-multipleexposure-to-health-stressors-in-indoor-built-environments.pdf.

HOSEY, Lance. 2012. The Shape of Green: Aesthetics, Ecology, and Design. Washington DC: Island Press.

KITAMORI, Kumi. 2012. "Executive Summary." In OECD Environmental Outlook to 2050: The Consequences of Inaction, edited by Kumi Kitamori and Ton Manders. Netherlands: OECD Publishing. Available online: https://read.oecd-ilibrary.org/environment/oecd-environmentaloutlook-to-2050_9789264122246-en#page1.

MONFORTI-FERRARIO, F., I. P. Pascua, J. F. Dallemand, V. Motola, M. Banja, N. Scarlat, H. Medarac, et al. 2015. Energy Use in the EU Food Sector: State of Play and Opportunities for Improvement. Luxembourg: Publications Office of the European Union. Available online: <https://publications.jrc.ec.europa.eu/repository/bitstream/JRC96121/Idna27247enn.pdf>.

PAPANEK, Victor. 1995. The Green Imperative: Ecology and Ethics in Design and Architecture. London: Thames and Hudson.

RAGANATHAN, Janet. 2013. "The Global Food Challenge Explained in 18 Graphics." World Resource Institute, December 3, 2013. Available online: <https://www.wri.org/insights/global-foodchallenge-explained-18-graphics>.

Generative Design by Matej Dubiš

DUBIŠ, Matej, 2018. Generative methods in car design. In Shapes of logic. Everything can be automated. Wrocław: Oficyna Wydawnicza Politechniki Wrocławskiej, pp 55-66. ISBN 978-83-7493-011-6. Available in the online catalogue of the central register of theses: <https://opac.crzp.sk/?fn=detailBiblioForm&sid=A3D-1C8DEF803EE7E347422CCFB9>

DUBIŠ, Matej. 2018. The Potential of Generative Design in Automotive Design. 185 p. Bratislava, Dissertation thesis. Faculty of Architecture STU in Bratislava. Supervisor Peter Paliatka.

GALANTER, Philip, 2008. What is Complexism? Generative Art and the Cultures of Science and the Humanities. [online]. In: Proceedings of the International Conference on Generative Art, Milan, Italy Generative Design Lab, Milan Polytechnic: City. Available online: http://philipgalanter.com/downloads/ga2008_what_is_complexism.pdf [cited 14.6.2018]

GALANTER, Philip, 2016. Generative Art Theory. [online]. In: A Companion to Digital Art. Vol. 1. John Wiley & Sons, Inc. [cit. 2018-06-14]. ISBN 1-1184-7520-8. Available online: http://cmuems.com/2016/60212/resources/galanter_generative.pdf [cited 14.6.2018]

Collaborative Craft by Martin Mjartan

CSIKSZENTMIHALYI, Mihaly: Creativity the psychology of discovery and invention, Harper-

Collins Publishers, New York, 2013, ISBN 978-0-06-228325-2

ČERNÝ, Michal, 2019. Digitální informační kurátorství jako univerzální edukační přístup. 2. vydanie. Brno: Masarykova univerzita. 206 s. ISBN 978-80-210-9233-4.

FLORIDA, Richard: The rise of the creative class and how it is transforming work, leisure, community and everyday life, Basic Books, New York, 2002, ISBN 978-1-5416-1774-2

FREIRE, Paulo, 1970. Pedagogy of the oppressed. New York: Continuum, 2005. 183 s. ISBN 0-8264-1276-9.

MJARTAN, Martin. 2021. Design as integral part of the creative centre of Slovak University of Technology in Bratislava. Faculty of Architecture and Design, Institute of Design, Slovak University of Technology, Bratislava, Dissertation thesis, 208 p.

ROTH, Bernard, 2015. The Achievement Habit. New York: HarperCollins. 273 s. ISBN: 978-0-06-235610-9.

SAWYER, Keith: Zig zag: the surprising path to greater creativity, Jossey - Bass, San Francisco, 2013, ISBN 978-1-118-29770-4

Senseable Biomaterials by Vlasta Kubušová

Kubušová V., Ho G., Irabien C., Li V., Weinstein A., Chawla Sh., Yeung D., Mershin A., Zolotovskiy K., Mogas-Soldevila L. 2023. Multiscale design of cell-free biologically active architectural structures. Frontiers in Bioengineering and Biotechnology. Volume 11. ISSN: 2296-4185. DOI: <https://doi.org/10.3389/fbioe.2023.1125156>

Kubušová et al. 2023. About us. Website of crafting plastics! studio. Available online: <https://www.craftingplastics.com/about-us> [cited 4.9.2023]

Kubušová et al. 2023. SENSBIOM I. Website of crafting plastics! studio. Available online: <https://www.craftingplastics.com/sensbiom-i> [cited 4.9.2023]

Wirth, Marlies. 2021. BREATHE IN / BREATHE OUT. VIENNA BIENNALE FOR CHANGE 2021. Available online: <https://blog.mak.at/vienna-biennale-2/> [cited 4.9.2023]

UPENN. 2023. Sensbiom I Active Materials. Senseable Biomaterials for Healthier Habitats. Available online: <https://www.design.upenn.edu/work/sensbiom-i-active-materials> [cited 4.9.2023]

UPENN. 2023. Sensbiom II - Solar Active Materials. Renewable & Senseable Futures. Available online: <https://www.design.upenn.edu/work/sensbiom-ii-solar-active-materials> [cited 4.9.2023]

Redefining Color Coating by Soňa Otiepková

OTIEPKOVÁ, Soňa. 2021. Role of colour in ecological approach to product and material design. Architecture papers of the Faculty of Architecture and Design STU. Volume 26, Issue 3, pp 33-41. Available online: <https://doi.org/10.2478/alfa-2021-0017>

PARUTA, P., Pucino, M., Boucher, J. 2021. Plastic Paints the Environment. A global assessment of paint's contribution to plastic leakage to Land Ocean & Waterways. EA - Environmental Action, 142 p. Available online: <https://www.e-a.earth/wp-content/uploads/2023/07/plastic-paint-the-environment.pdf> [cited 20.8.2023]

Experience of Time by Petra Hurai

BERGSON, Henri. 2001. Time and Free Will. An essay on the Immediate Data of Consciousness. Dover Publications, New York, 287 p.

BRAND, Stewart. 1999. The Clock Of The Long Now: Time and Responsibility. New York: Basic Books. ISBN 0-465-04512-X

FOSTER, Russell. 2022. Life Time. The New Science of the Body Clock, and How It Can Revolutionize Your Sleep and Health. Penguin Random House, Dublin, 465 p.

HURAI, Petra. 2023. Principles of Time Measurement and Their Development Using Intelligent Technologies. Faculty of Architecture and Design, Institute of Design, Slovak University of Technology, Bratislava, Dissertation thesis, 181 p. Available in the online catalogue of the central register of theses: <https://opac.crzp.sk/?fn=detailBiblioForm&sid=F806E6B7D-49B8C8B1760F8F8458C>

RUSHKOFF, Douglas. 2013. Present Shock. When Everything Happens Now. Penguin Publishing Group. 304 p.

THACKARA, John. 2006. In the Bubble. Designing in a Complex World. London: The MIT Press. 321 s. ISBN-13: 978-0-262-20157-5.

THÖNES, S., Von Castell, C., Iflinger, J., Oberfeld, D. 2018. Color and time perception: Evidence for temporal overestimation of blue stimuli. Scientific Reports 8, 1688. Available online: <https://www.nature.com/articles/s41598-018-19892-z> [cited 23.3.2023]

ZAPLETAL, Aleš. 2022. Obrazy filosofie a tělesná mysl. Akademie výtvarných umění v Praze. NAVU - Nakladatelství AVU. 247 p. ISBN 978-80-88366-35-5.

Image Credits

- Tibor Antony © images on pages 18, 19, 23, 24, photograph on page 26, technical drawing on page 27
- Matej Dubiš © all images on page 37
- Dumolab Research, Stuart Weitzman School of Design University of Pennsylvania © photograph on pages 56-57
- Petra Hurai © images on pages 12, 15, 69, 74, vector illustrations on pages 76, 77
- Peter Chmela © vector illustrations on cover page and page 17
- Marco Kessler, Michelangelo Foundation © photograph on page 46
- Vlasta Kubušová © photographs on page 54
- Martin Mjartan © photograph on page 43 (first from the bottom)
- Soňa Otiepková © photographs on pages 64, 67, illustration and color definitions on pages 65, 66
- Natália Petříková © photographs on page 43 (top and middle)
- Peter Skokan © photograph on page 70
- Martin Sombathy © technical drawing on page 47
- Adam Šakový © photographs on pages 07, 08, 11, 29, 30, 33, 34, 39, 40, 44-45, 49, 50, 59, 60, 62, 63
- Škoda Auto, a.s © photograph on page 36
- Marek Wurfl © photograph on page 55

Publication

Michala Lipková: Prototyping Change
Doctoral design research projects
at FAD STU in Bratislava

Publisher:
Faculty of Architecture and Design,
Slovak University of Technology
SPEKTRUM STU Publishing, 2023
ISBN 978-80-227-5335-7

Text author:
Michala Lipková

1st edition, Bratislava 2023
All rights reserved

Proofreading:
Katarína Kasalová

Edition:
100 pieces

Graphic design:
Chmela studio

Typeface:
Styrene by Commercial type

Print:
VACH print

Paper:
Koehler Eco® Black 270 g/m² (cover)
and Crush Corn 100 g/m² (core)
distributed by Europapier Slovensko

Exhibition project

DESIGN × SCIENCE
Doctoral design research projects
at FAD STU in Bratislava

Location:
Designblok - 25th edition of Prague
International Design Festival,
4.– 8. 10. 2023,
Openstudio at The Trade Fair Palace,
Dukelských hrdinů 47,
170 00 Prague 7, Czech Republic

Featured authors:
Tibor Antony, Matej Dubiš,
Petra Hurai, Vlasta Kubušová,
Martin Mjartan, Soňa Otiepková

Exhibition curator:
Michala Lipková

Production:
Petra Hurai,
Michala Lipková

Installation design:
František Dorko,
Martin Sombathy

Trimtab | Prototyping Change
www.tr1mtab.com

National infrastructure for technology
transfer support in Slovakia II - NITT SK II
Investment in your future.
This project is supported by the
European Regional Development Fund.
www.opii.gov.sk

EUROPAPIER

CRUSH is the ecological range of upcycling papers made using process residues from organic products (corn, coconut, cocoa, citrus fruits, olives, coffee, kiwi fruits, cherries, lavender, grapes, hazelnuts and almonds) to replace up to 15% of virgin tree pulp. Crush is FSCTM certified, produces with EKOenergy, GMO free, contains 40% post-consumer recycled waste. The carbon footprint is reduced by 20%. Any unavoidable emissions generated during production of this eco-friendly paper are fully offset through Carbon Credits. Crush is recyclable and biodegradable!

Koehler Eco® is the new tinted paper range made from 100% recycling fibers. The range is harmless to health and the environment, the range is acid-free, ph-neutral and tinted by a carbon-free staining method. Due to the production from 100% secondary fibers and the eco-certifications - FSC recycled, Blue Angel, and EU-Ecolabel certified - Koehler Eco® papers are the green alternative in the sector of high-quality packaging.

- 18 Biophilia**
Design for poly-sensorial
biophilic experience
- 28 Generative Design**
Rethinking linear workflows
- 38 Collaborative Craft**
Enabling serendipity by
community building and craft
- 48 Senseable Biomaterials**
Design-driven innovations
in biomaterials
- 58 Redefining Color Coating**
Color palette for
sustainable future
- 68 Experience of Time**
Toolkit for experience
design and speculation

ISBN 978-80-227-5335-7

