

Syracuse University

SURFACE at Syracuse University

International Programs

International Programs

Summer 2020

How Natural Materials Affect Our Perception Of the Built Environment

Iryna Demianiuk

Follow this and additional works at: <https://surface.syr.edu/eli>



Part of the [Cognitive Psychology Commons](#), [Environmental Design Commons](#), [Neuroscience and Neurobiology Commons](#), and the [Place and Environment Commons](#)

The views expressed in these works are entirely those of their authors and do not represent the views of the Fulbright Program, the U.S. Department of State, or any of its partner organizations.

Recommended Citation

Demianiuk, Iryna, "How Natural Materials Affect Our Perception Of the Built Environment" (2020). *International Programs*. 51.
<https://surface.syr.edu/eli/51>

This Poster is brought to you for free and open access by the International Programs at SURFACE at Syracuse University. It has been accepted for inclusion in International Programs by an authorized administrator of SURFACE at Syracuse University. For more information, please contact surface@syr.edu.

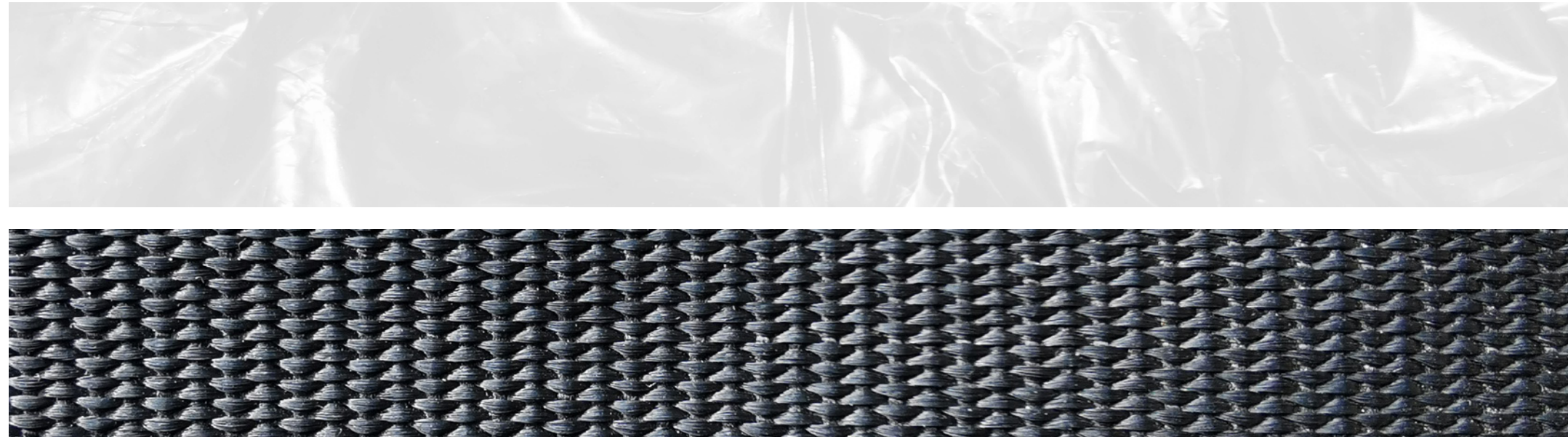
How natural materials affect our perception of the built environment

Author: Iryna Demianiuk.

Instructors: Constance Walters, Carmen J. Falasco.

ABSTRACT

Our daily life is shaped by the emotions we feel, and our emotions are highly dependent on the environment we live in. Those connections have been developing through the whole history of humankind, starting with the feeling of shelter near bonfires in caves. Today, we can discover neural responses to environmental conditions and even certain materials around us. Those findings have allowed

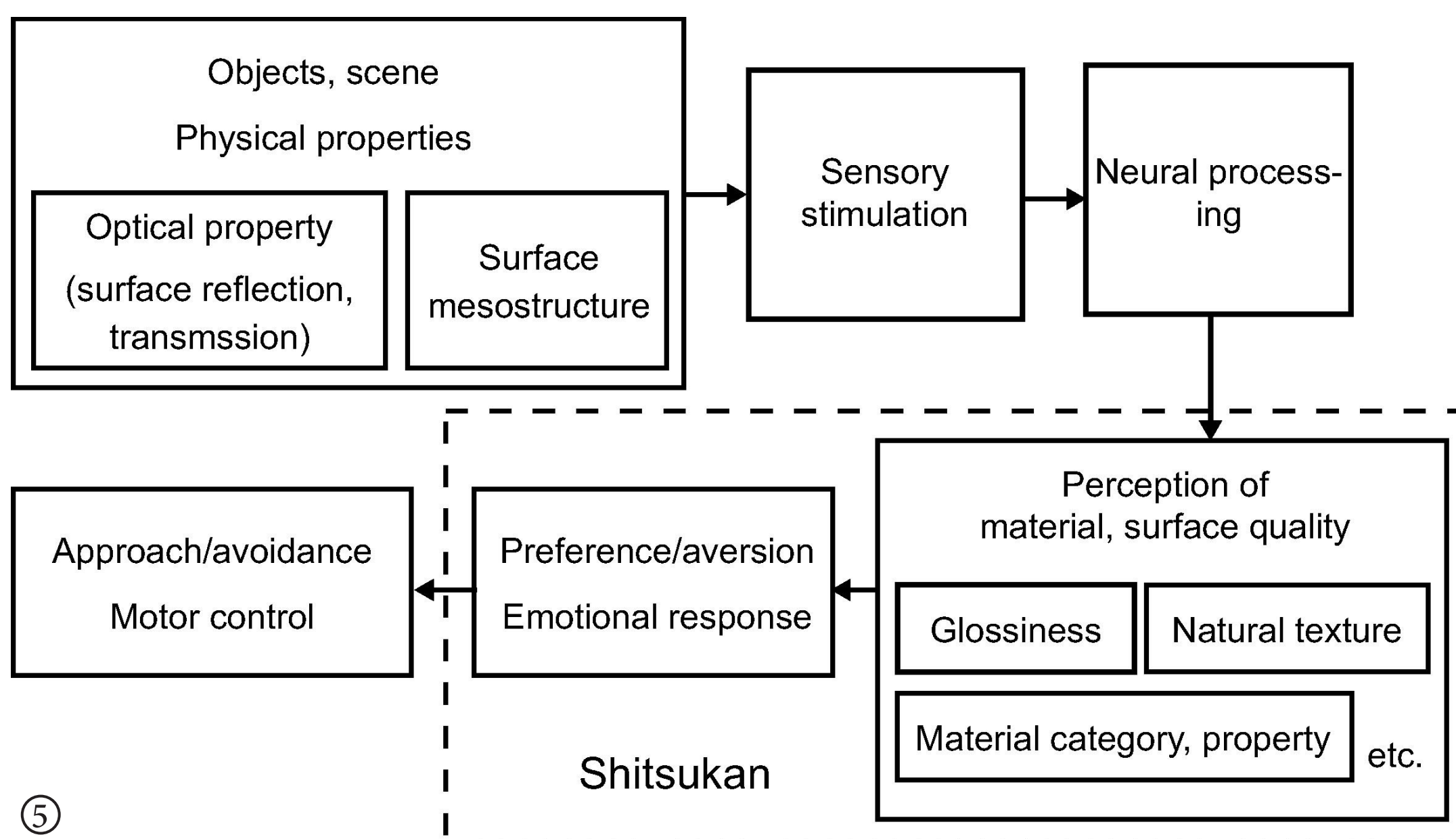


architects and neuroscientists to work more closely together, and, through that collaboration, the new field of neuroarchitecture appeared. This relatively young discipline explores the way our brain responds to the environmental stimuli we are facing, and how different elements of space influence our emotions, thoughts, and behavior.



HISTORY AND BACKGROUND

Neuroscience, architecture, environmental psychology, and behavioral economics are those disciplines that explore the way we perceive space (McIntosh and Jadavji, 2017). As different studies tend to influence each other, approximately 25 years ago “neuroarchitecture” appeared as a formal field of study. According to Mallgrave (2015), it all began in 1970s when B. Libet and G. Edelman started to explore the nature of human consciousness. Later, in the early 1990s, “mirror” neurons were discovered, and today we know even about isolated areas of the brain that determine how we perceive spatial properties of buildings and landscapes (Mallgrave, 2015).



We can see how people inhabited natural environment and used natural materials in prehistoric (1) and ancient (2) times and how architects continue to unite nature and living spaces (3, 4).



Fig. 1. Prehistoric cave art. Retrieved from: <https://www.mentalfloss.com/article/541657/ice-age-artists-used-charcoal-over-10000-years-create-europes-oldest-cave-paintings>
 Fig. 2. The original homes of the Toda people, an ancient Indian tribe. Retrieved from: <https://www.thevintagenews.com/2016/10/18/toda-huts-the-original-homes-of-the-toda-people-an-ancient-indian-tribe/>
 Fig. 3. House II, Palm Springs, architect Albert Frey. Retrieved from: <https://www.wallpaper.com/architecture/palm-springs-modernism-week-albert-frey-usa>
 Fig. 4. Hammerman House, LA, architect Richard Neutra. Retrieved from: <https://thespaces.com/richard-neutras-refreshed-hammerman-house-lists-13-5m-la/>
 Fig. 5. Factors related to material perception. Retrieved from: <https://www.sciencedirect.com/science/article/pii/S0306452218305888>

FINDINGS

“In the medieval world, even the pavements look good enough to eat” (McGilchrist, 2015, p.111). These words describe the way human brain can perceive materials and textures, and how we can be

Physical Well-Being
 Improves cardiac functions, reduces hypertension, balances hormonal regulation, improves respiratory functioning, enhances eyesight.

Psychological Well-Being
 Emotional regulation, increased attention, positive thinking, improve stress management, resilience, mood upliftment.

According to Sarah Williams Goldhagen (2018), there is no neutral space, it either helps or hurts. To be sure the design has a positive

CONCLUSION

“Natural materials allow us to sink in; they have a history — a history that is revealed in the coming together of space and time in the present” (McGilchrist, 2015, p.115).

REFERENCES

1. Chowdhury, M.R. (2020). “The Positive Effects Of Nature On Your Mental Well-Being”. *PositivePsychology*, <https://positivepsychology.com/positive-effects-of-nature/>.
 2. Goldhagen, S.W. (2018). “Welcome to your world: the mind, the body, and the built environment”. *YouTube*, uploaded by UVA School of Architecture, 29 March 2018, <https://youtu.be/4k0JhR18CrI>.
 3. Mallgrave, H.F. (2015). “Know Thyself”: Or what designers can learn from biological sciences”. In S. Robinson and J. Pallasmaa (Eds.), “Mind in architecture: neuroscience, embodiment, and the future of design”, (pp. 17-18).

unconsciously amazed by it, feel pleasure and excitement. There are numerous studies showing how natural environment impacts our well-being, which Chowdhury (2020) presents in 4 groups:

Social Well-Being
 Effective interpersonal communication, stronger bonds, deeper emotional attachment, empathy, less conflict and aggression at home.

Spiritual Well-Being
 Deeper sense of self, more gratitude, self-enhancement, increased insight towards the positive and negative aspects of life.

influence it is important to use natural materials or those similar in complexity of its texture and tactile properties.

Based on the findings of neuroscientists, architects and designers are capable of creating spaces to inspire and “heal” its users, and incorporation of natural settings and materials is the proven method.

Cambridge, MA: MIT Press.
 4. McGilchrist, I. (2015). “Tending to the world”. In S. Robinson and J. Pallasmaa (Eds.), “Mind in architecture: neuroscience, embodiment, and the future of design”, (pp. 111-115). Cambridge, MA: MIT Press.
 5. McIntosh, A.R. and Jadavji, N. M. (2017). “Application of Neuroscience Principles for Evidence-Based Design in Architectural Education”. *Journal of Young Investigators*, September 2017, vol. 33, issue 4, (pp. 71-76). doi:10.22186/jyi.33.4.71-76.