

Cincinnati, USA

# Sensory Reflection towards Product Design Ideation

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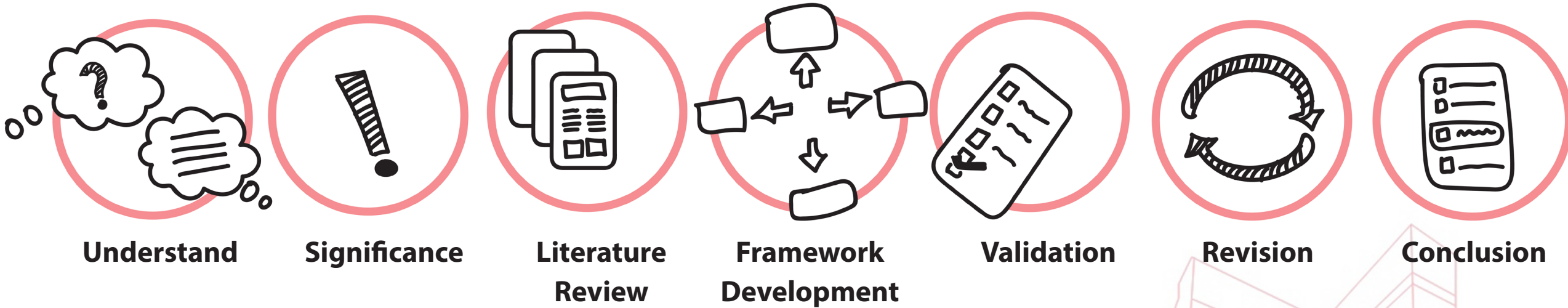


Image source: <http://www.tyrepress.com/2015/02/new-car-is-britains-favourite-smell/>

Due to an increasing quantity of **abstract information** , humans are often oblivious to sensory stimuli and related information in their surroundings unless deliberately made aware of it.



# RESEARCH METHODOLOGY



The current case study is a qualitative method of inquiry reflecting two key features of qualitative research-

1. understanding the various perspectives on **sensory perceptions in real-world settings**
2. **Constructing hypotheses or concepts** from the available data.

This study investigates various **literature data sources and conducts a survey of products** that exhibit sensory properties readily. Together, these approaches led to an awareness of how the senses prevail in design and in other fields.

# SIGNIFICANCE OF RESEARCH

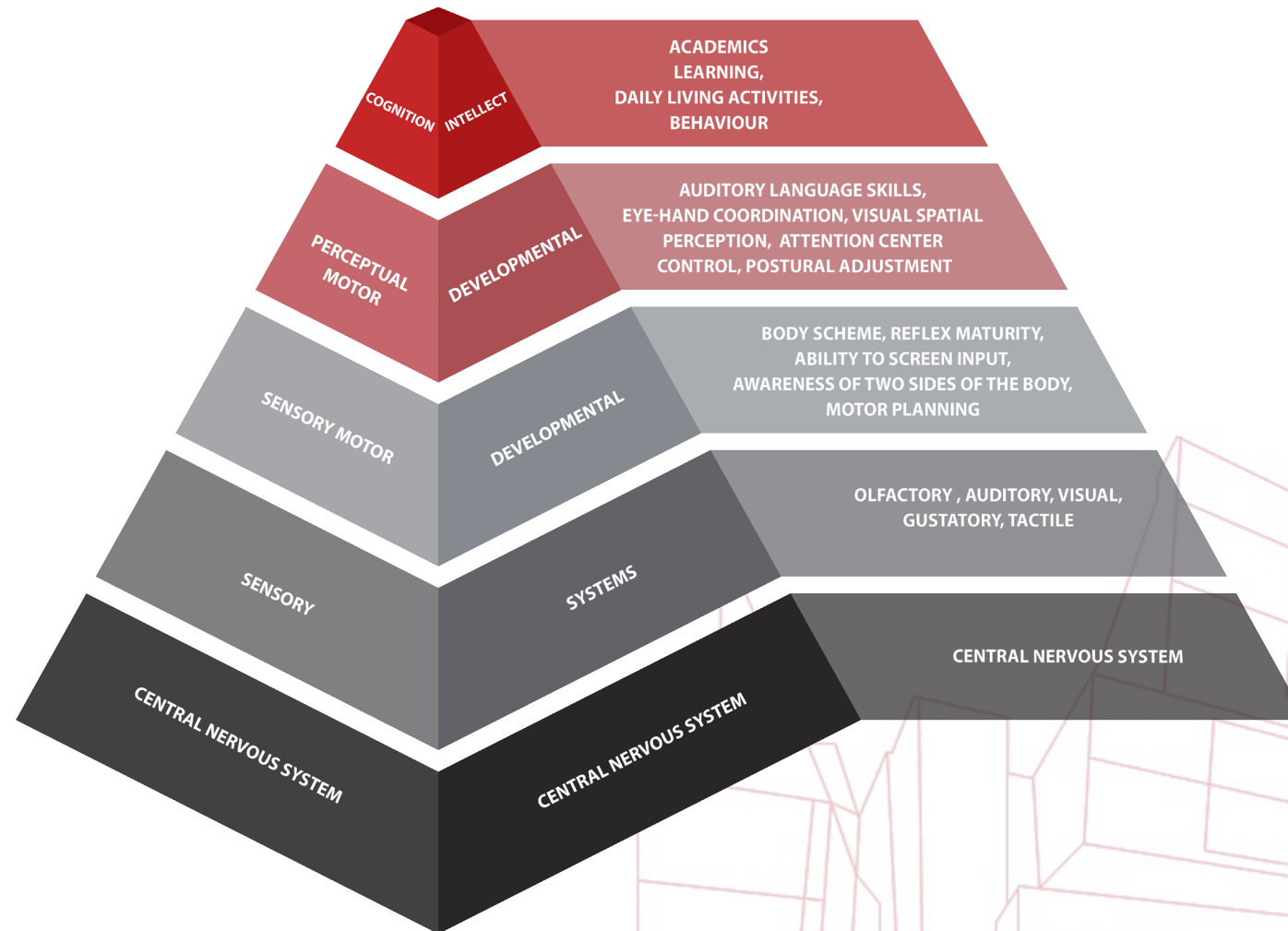
Sensory modalities can still serve as a **primary touch point** through which people receive information about their environment and products with which they interact.

According to JWT report, **70% of UK and US Millennials** crave experiences that stimulate their senses (2013)

Although it has been well-acknowledged that senses play a role in effective product design, research has found that perceptual processes for **all people are not identical** (Haverkamp, 2011). Thus, there is value in research that can systematically employ the characteristics of sight, smell, sound, taste and touch as a part of a design process.



# SIGNIFICANCE OF THE RESEARCH



**The Pyramid of Learning** by Williams and Shellenberger (1996) demonstrates a bottom-up approach of how the information received from our senses develops into other forms of **perceptual, behavioral, cognitive systems**.

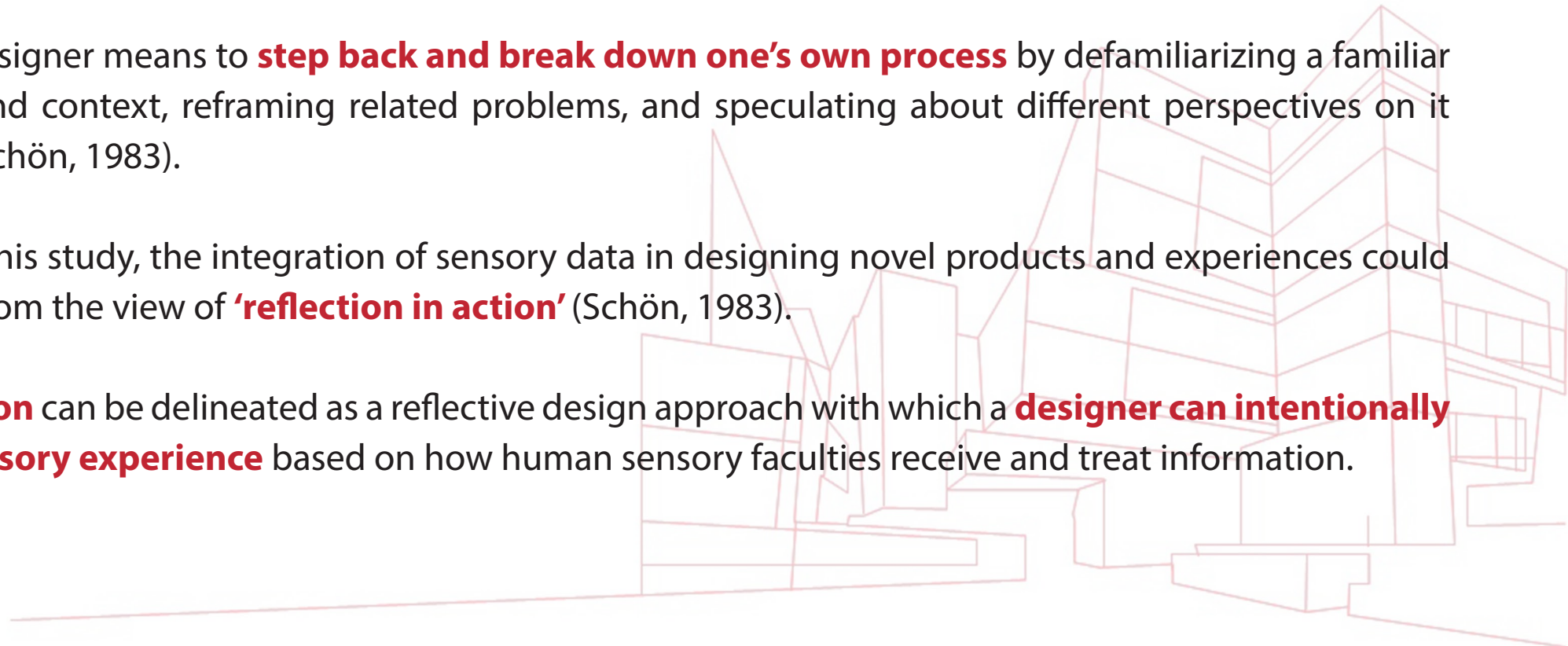
# SENSORY REFLECTION

The developments in technology require designers to **continuously better their design processes and methods** in correspondence with a new design environment; thus, a designer's reflection on current practice is a crucial part of the improvement.

Reflection as a designer means to **step back and break down one's own process** by defamiliarizing a familiar design subject and context, reframing related problems, and speculating about different perspectives on it (Reymen, 2001; Schön, 1983).

As suggested in this study, the integration of sensory data in designing novel products and experiences could be approached from the view of **'reflection in action'** (Schön, 1983).

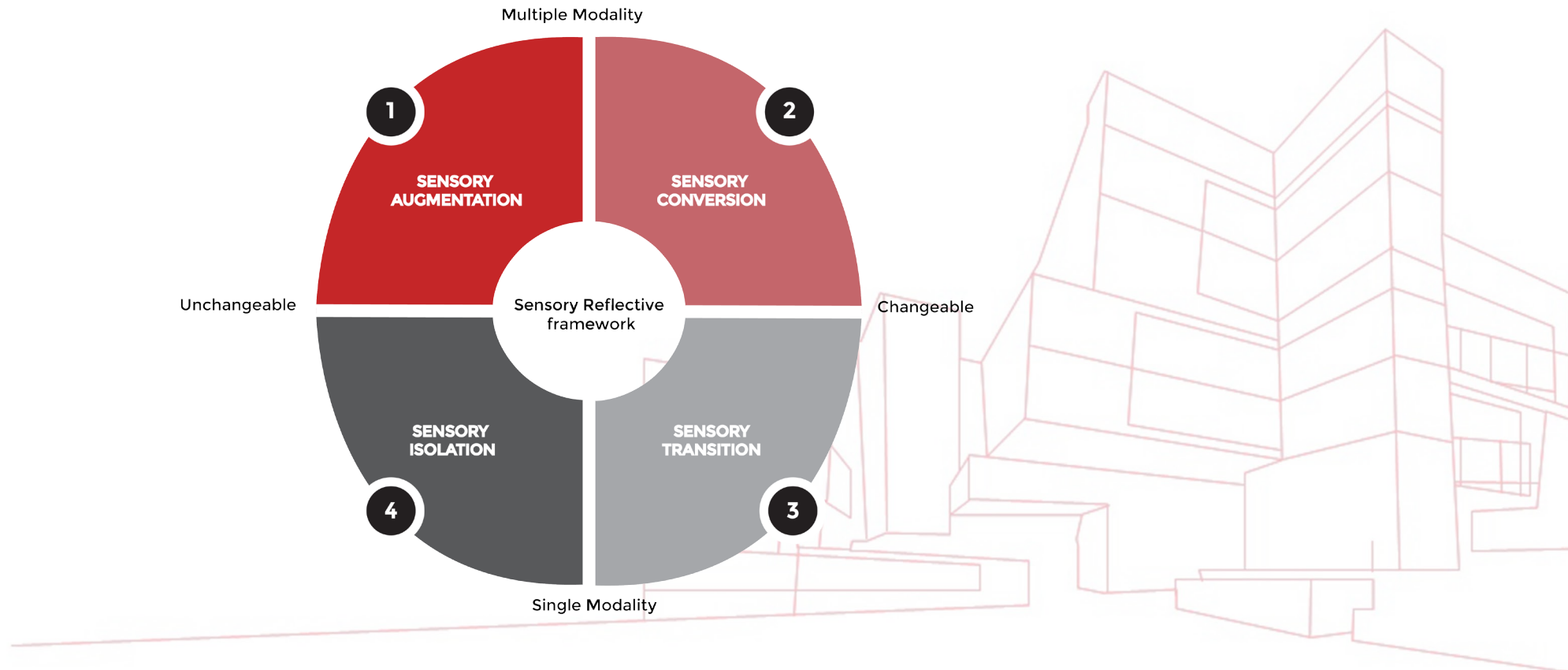
**Sensory Reflection** can be delineated as a reflective design approach with which a **designer can intentionally create a new sensory experience** based on how human sensory faculties receive and treat information.



# SENSORY REFLECTIVE FRAMEWORK

**'Sensory Reflective Framework'** is proposed for supporting designers' reflection on human sensory faculties and their related meanings in product design ideation.

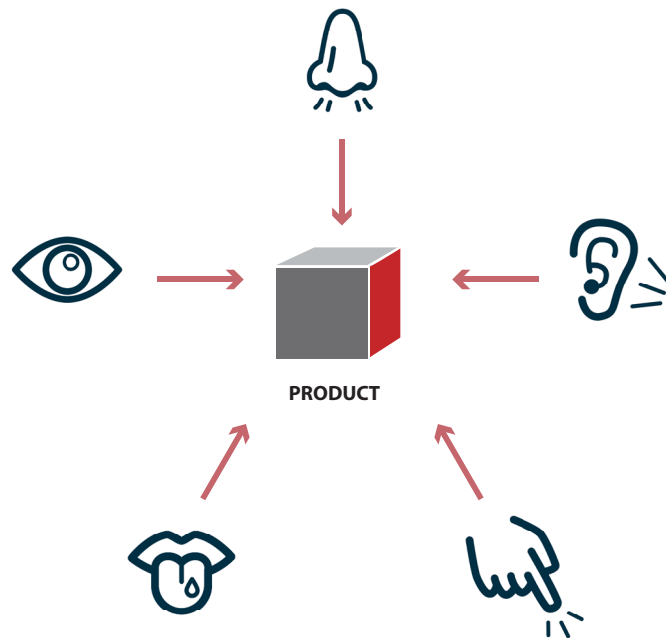
In what follows, four strategies to deliberate the practice of 'Sensory Reflection' to product design ideation are described as the core concepts of the proposed framework.



# SENSORY REFLECTIVE FRAMEWORK

**Sensory Augmentation** is a creative thought process which helps a designer to create a sensory experience that extends one sensory mode to multiple sensory characteristics beyond visual sensory cues (e.g., color, contrast, motion).

**Augmentation** means to increase or supplement the existing. We use vision as our primary sense to understand and confirm the perception from other senses, but more novel experiences are created by leveraging the use of other senses.



**EXAMPLE**

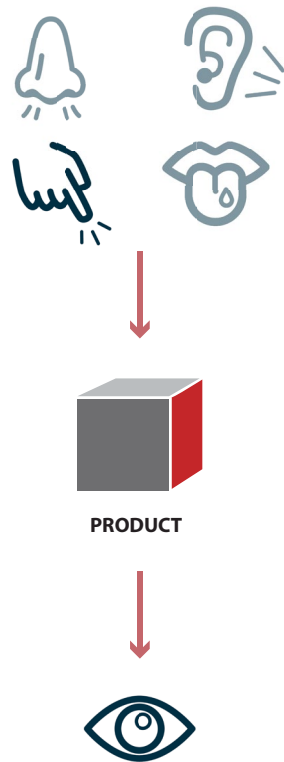
A photograph showing two hands touching a round wooden bowl with a white interior. The hands are positioned on opposite sides of the bowl, with fingers resting on the rim and the inner surface.

Synchrony is a music platform that helps parents and children with autism reduce tactile defensiveness (Tay,2015).This is an instance of how materials, vibration and level of sound are integrated to augment tactile sensation.

# SENSORY REFLECTIVE FRAMEWORK

**Sensory Conversion** is a strategy for altering the behavior of one sensory characteristic with respect to another by combining them to create an interesting design dimension.

In this framework, Sensory Conversion is **not a mere replacement of one sensory modality with another** because of a deficiency or inefficiency. Instead, it is grounded in a careful understanding of how one sensory aspect can be related to as well as influenced by the other sensory aspects in design ideation.



## EXAMPLE

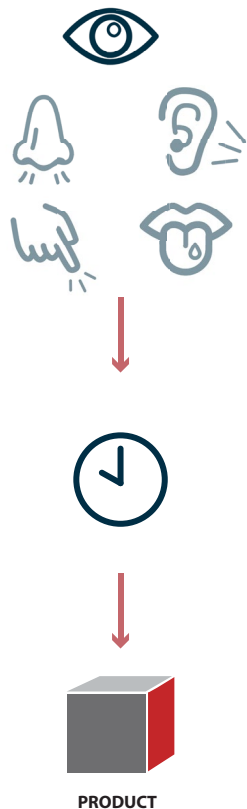


Beck's brewery from North Germany is an example of creative and playful packaging: a user can scratch on the aluminum label of a bottle as a creative canvas open for personalization. This is an instance where a visual sensory character changes in relation to touch.

# SENSORY REFLECTIVE FRAMEWORK

**Sensory Transition** is to transform sensory characteristics over time by exploring how a product would unfold new forms and sensory qualities in a temporal dimension.

The longer a user spends time using a product, the more the user would develop **emotional engagement** with the product; and designers could consider this temporal change as an influential factor on user's attachment to a product.



## EXAMPLE

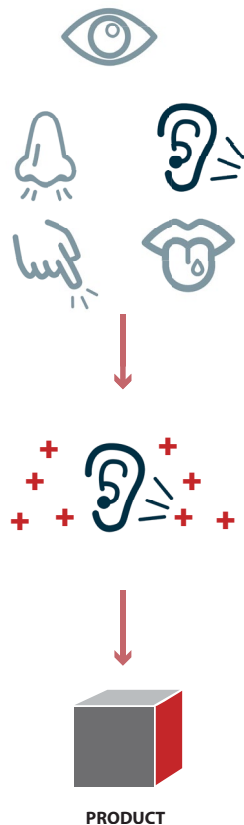


Fred Wake up cup which changes the sleepy eyes to bulging to indicate the user's reaction to a morning cup of coffee (Orchant, 2013). A hot water coffee mug changing the graphics on the outside as time progresses indicates the temperature of the water inside.

# SENSORY REFLECTIVE FRAMEWORK

**Sensory Isolation:** Isolation is usually viewed as a negative connotation of things. In this study, it implies intentional cutting off other sensory stimuli or **temporary detachment** from them to reinforce one focused sensory modality.

A designer can take a step back and reflect on this list of possible choices and determine which sensory aspect to enhance or diminish in ideating new product concepts. Considering the sensory cues in isolation might not improve the product in terms of technology but will enhance the sensory experience.



## EXAMPLE

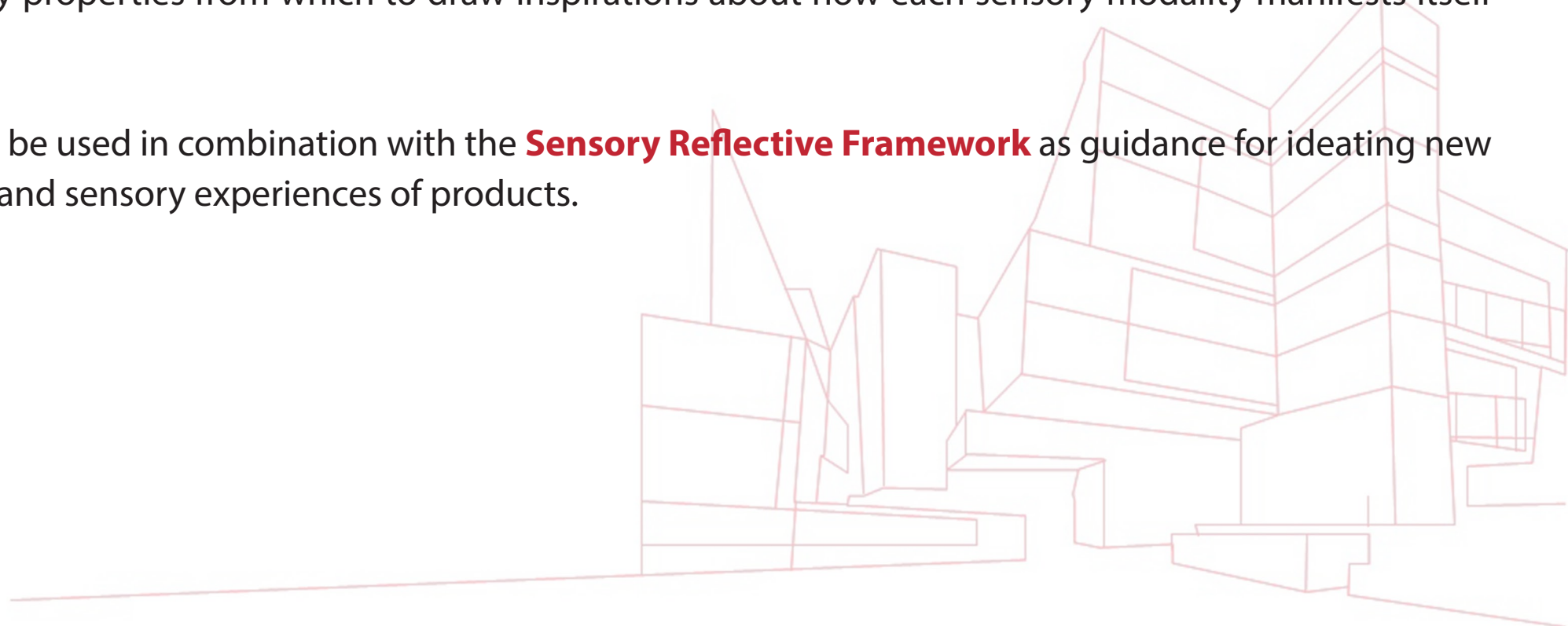


Eidos mask which isolates the sound in the user's environment (Etherington, 2015). This conceptual headset is a good model of sensory isolation. The mask intentionally neutralizes the background noise and hear what the user speaks clearly.

# SENSORY LIBRARY

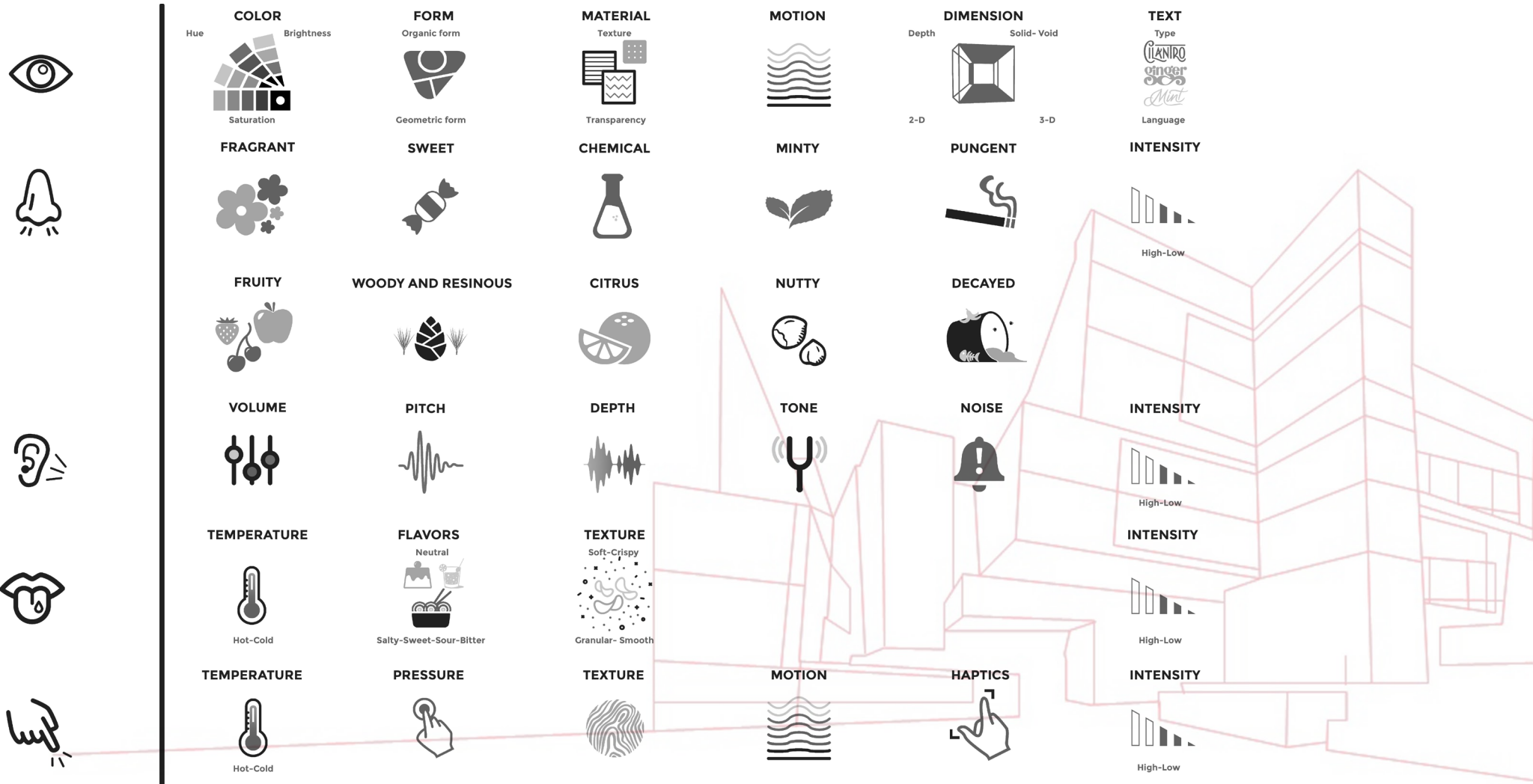
**Sensory Library** is another component of the proposed framework, aims to provide designers with options of specific sensory properties from which to draw inspirations about how each sensory modality manifests itself in design.

This library can be used in combination with the **Sensory Reflective Framework** as guidance for ideating new functionalities and sensory experiences of products.



# SENSORY LIBRARY

Each category in this library is based on the inferences from different research journals. It contains the features of each sensory modality and how they are specified in other sub-categories.

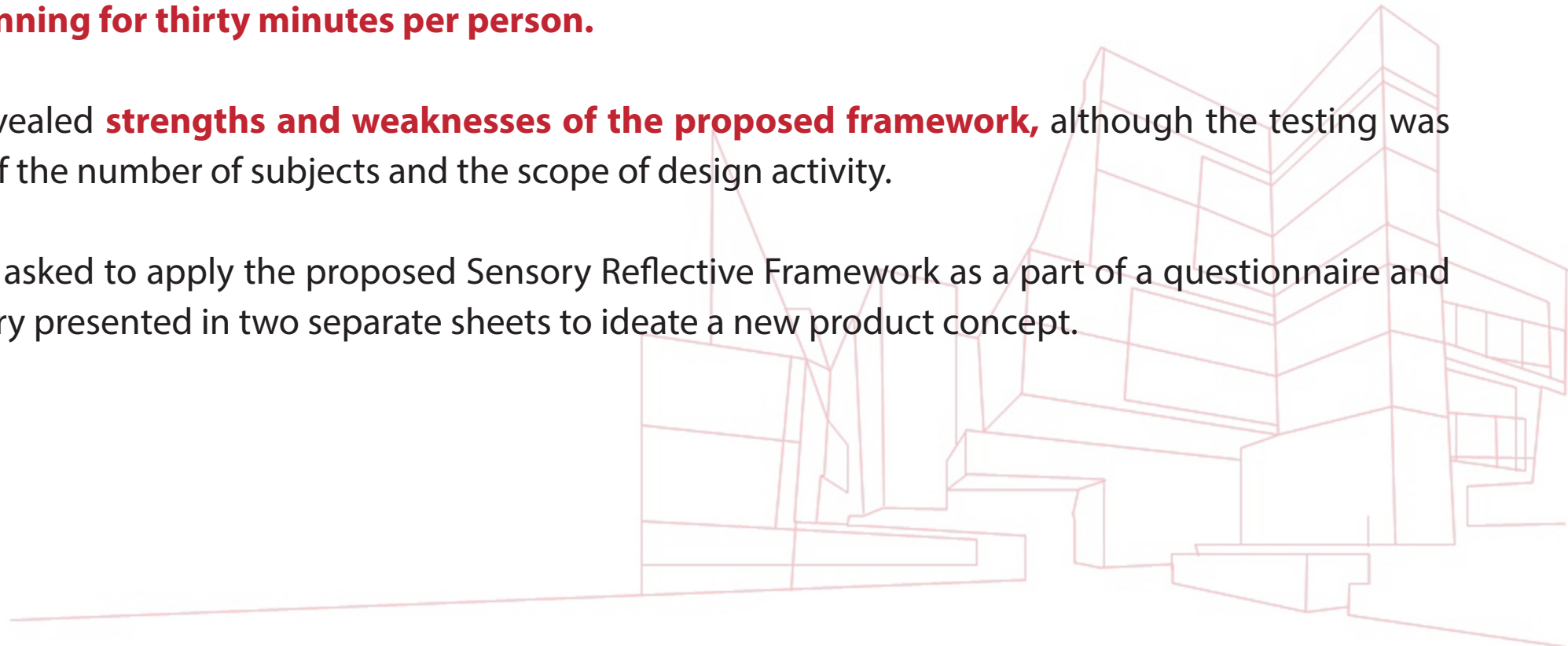


# PILOT WORKSHOP

A pilot design workshop was conducted to evaluate and improve the Sensory Reflective Framework with **four participants spanning for thirty minutes per person.**

The workshop revealed **strengths and weaknesses of the proposed framework,** although the testing was limited in terms of the number of subjects and the scope of design activity.

Participants were asked to apply the proposed Sensory Reflective Framework as a part of a questionnaire and the Sensory Library presented in two separate sheets to ideate a new product concept.



This is the workshop questionnaire with left hand side designed to understand participant's design methodology and right side provided to ideate using senses.

1. Tell me something about yourself

2. What emotion do you feel as soon as you see this product? ( Love it, Hate it, Indifferent)

3. What could be changed if you were the design and user?

4. what does your design process look like?

2



5. What factors makes a product personal to you?

3

6. Have you consciously considered sensory factors in your design? Why or Why not?

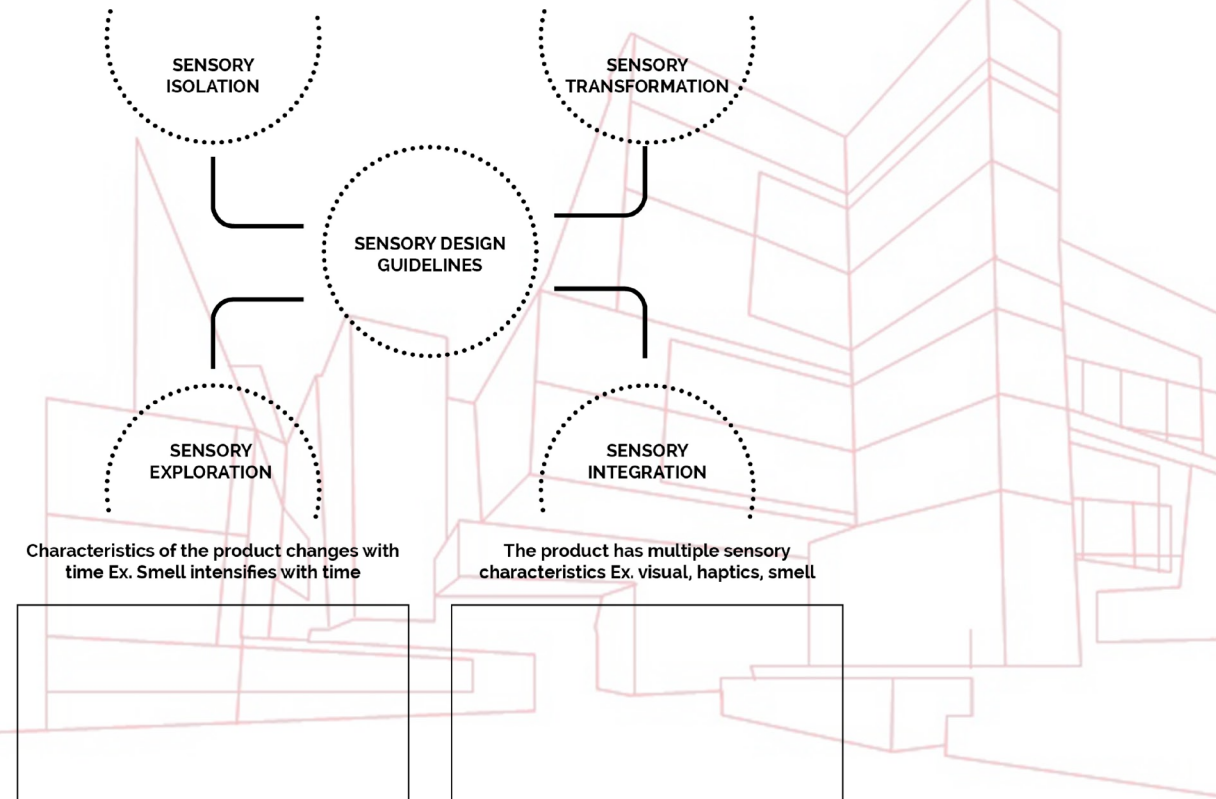
8. What did you or didn't you understand about the guidelines? Any suggestions to improve?





Enhancing or Minimising existing sensory character Ex. adding more color

Characteristics of the product has a combined effect Ex. Taste changes with touch



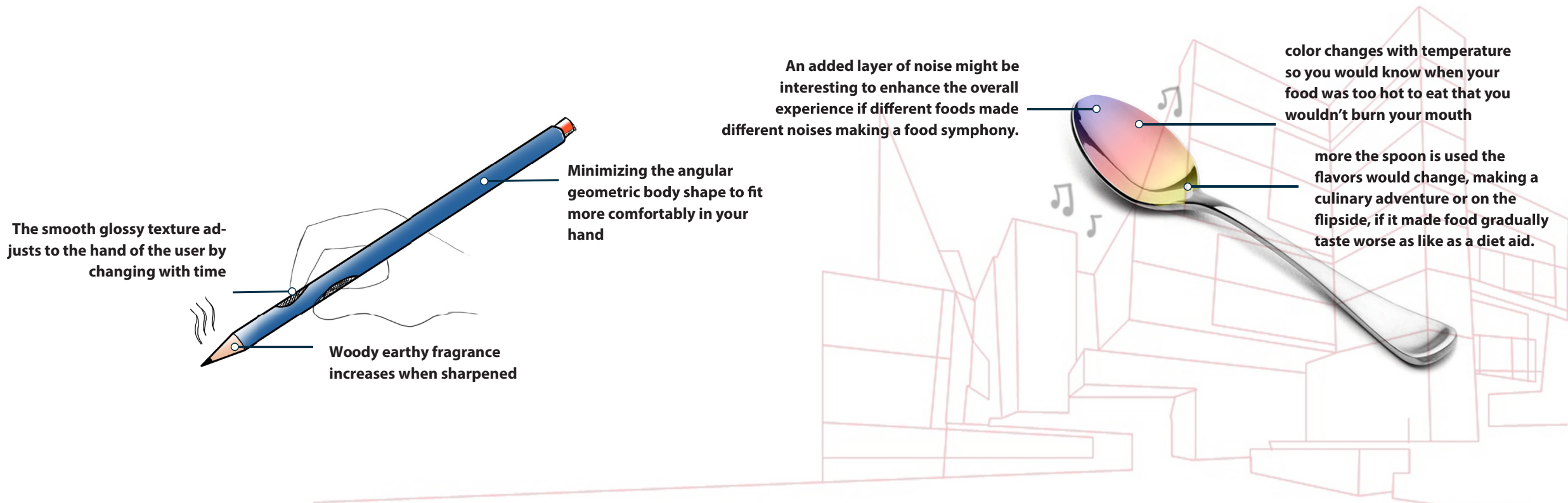
Characteristics of the product changes with time Ex. Smell intensifies with time

The product has multiple sensory characteristics Ex. visual, haptics, smell

# ANALYSIS

Responses by each participant was transcribed in detail. This gave an insight into an individual's design process, design preferences, emotional responses and innovative product ideas generated through the framework.

The image shows several ideas that emerged from the workshop.



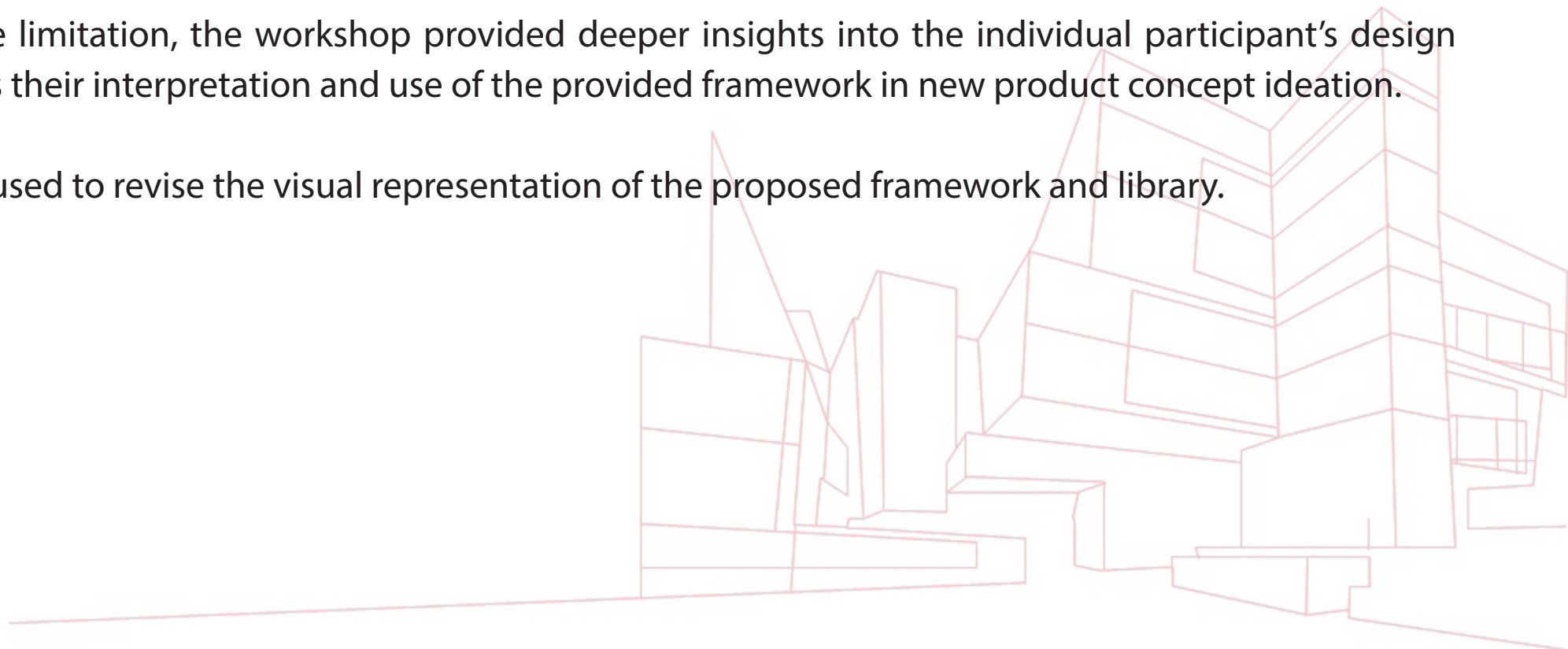
# REVISIONS

The participants mostly seemed to clearly understand what they were asked to do, but the ideation only with images and guided questionnaire limited their design space.

Interactions with **actual artifacts** could have further inspired them with richer sensory stimuli.

Regardless of the limitation, the workshop provided deeper insights into the individual participant's design process as well as their interpretation and use of the provided framework in new product concept ideation.

The findings are used to revise the visual representation of the proposed framework and library.



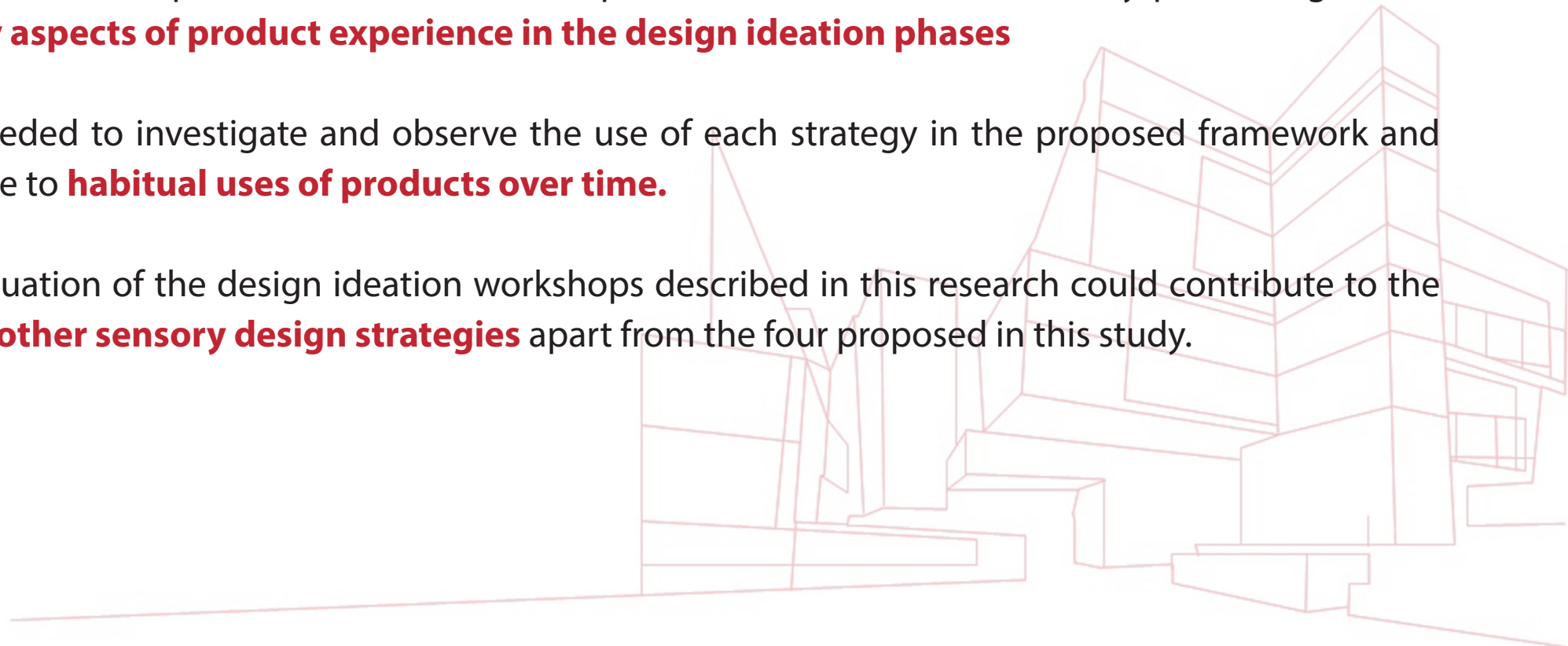
# CONCLUSION

This **sensory-attentive strategy** could potentially help designers achieve emotionally-engaging designs with enhanced sensory characteristics.

While our senses are generally used for **evaluation and verification of actions during product use**, the proposed framework developed in this research is unique in that it seeks to deliberately push designers to **consider sensory aspects of product experience in the design ideation phases**

Future work is needed to investigate and observe the use of each strategy in the proposed framework and probe its relevance to **habitual uses of products over time**.

Finally, the continuation of the design ideation workshops described in this research could contribute to the **identification of other sensory design strategies** apart from the four proposed in this study.



## TAKE- AWAYS

Sensory modalities can still serve as a **primary touch point** through which people receive information about their environment and products with which they interact.

**Sensory Reflection** can be defined as a reflective design approach with which a designer can intentionally create a new sensory experience based on how human sensory faculties receive and treat information.

When designers **make a conscious attempt to understand the sensory attributes** that influence product design and corresponding user interactions, they can generate novel ideas by leveraging sensory modalities and their manifestations through designed products.

**THANK YOU FOR YOUR TIME!**

