

# Tactile score,

a method of describing the sense of touching

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**Abstract:** Although tactile sense is irreducible for human beings, suitable methods for describing and sharing the tactile sense have not developed yet. Here we propose a method for describing the tactile sense based on musical scoring, which we refer to as the “tactile score.” On designing tactile sense, one of the important issues is how to design “comfortable” tactile sense. In order to consider it, we have been interested in massaging; it gives us comfortable stimulus and has been used in various areas such as medicine, cosmetics, education and so on. We have been collaborate with cosmeticians who gives massages and based on their experiences in beauty salons, we have developed the method for describing massaging, “tactile score”; and we have analyzed massages that show high beauty effects by using the tactile score and found that there are basic techniques of massages and also the rules of composing techniques exist. Tactile score have been developed for massaging, we also show that this method can be applied to various areas, in order to create comfortable tactile sense.

**Key words:** *Paper Template, Guides, instructions, author's kit, conference publications*

## 1 Introduction

Tactile sense has been of interest to psychology, psychophysics, cognitive science and so on; and recently it also has been of interest to engineering and design. In engineering, tactile sense has been investigated related to the virtual reality or robotics, where main subject is how to regenerate tactile sense mechanically (Oxford 2010). In the product design or manufacturing, tactile sense is an important factor; for example in the product design of electronic equipments such as a smart phone or iPad, tactile sense is a key factor of designing (for example Takeo 2004). For example, massage has been a state of art technique of tactile sense for long time; since a massage affects our mental and physiology, it has been used in broad area and its effects have been investigated in rehabilitation medicine, psychiatry, the art of cosmetic treatments and so on, and it has been shown that a massage improves functional recovery in rehabilitation, brings realization and improves the condition of skin. And also tactile sense has been used in education, training of self-awareness and so on.

One of a challenge in tactile sense researches is how to share and deliver the tactile sense with each other; we can share a beautiful painting or music piece in a museum or concert hall; we have long history and art works in the art of seeing and listening, however we do not have such art works in the tactile sense. A sculpture has been regarded as “the art of tactile sense,” however it is not common to touch the art works directly in a museum, we just see the sculpture and feel tactile sense through by seeing without touching it.

## **1-2 Workshop on Design in Tactile sense, a putative approach sharing tactile sense**

A putative approach to share the tactile sense with each other is body workshop; Italian designer, Bruno Munari educates children through the sense of touch by the tactile workshops (Munari 2004). His enthusiastic subjects that take part in these workshops are children. Munari's observations provoke thought on the sense of touch and the impact of diverting the visual focus and refocusing on the tactile. This prompts several questions: What occurs in the mind when one comes in physical contact with an object without the use of his or her vision? There may be a heightened awareness through the other senses, but what more? Is this an exercise (and expansion) for the imagination? Is more of an impression made when one can interact with the object without the handicap of sight? And, can this potentially lead to a greater investment in the object (content/experience)? (based on <http://stircenter.com/2009/02/21/bruno-munaris-tactile-workshops/>)

**Workshop based on Philosophy of Somaesthetics:** Richard Shusterman has been proposed the somaesthetics, it is a new interdisciplinary field whose roots are in philosophical theory, somaesthetics offers an integrative conceptual framework and a menu of methodologies not only for better understanding our somatic experience, but also for improving the quality of our bodily perception, performance, and presentation. Such heightened somatic awareness and mastery offers benefits to many fields including design. Our experience of ourselves and in our world is always embodied, and it involves somatic responses and feelings that are typically unnoticed though they are unavoidable and indispensable for our proficient function. We need a proper feel for our tools in order to use them most effectively; and this includes the use of one's own body in using other tools. For the body is our indispensable tool of tools, the necessary medium of our being, perception, action and self-presentation in the world. By exploring the fundamental features of our embodied ways of engaging the world and transforming it through action and construction, somaesthetics can provide useful insights and experiential skills to help designers produce products and situations that provide more rewarding and pleasurable experience (Shusterman 2012).

He has been organizing bodyworkshop as a certified practitioner of Feldenkrais Method and a somatic therapist. He gives workshops on somaesthetics that include practical exercises and demonstrations, but also has experience in treating different cases of somatic disabilities.

**Haptica Project:** Authors (R. & Y. Suzuki) have been organizing the project focused on tactile sense of massaging, haptica project, since 2002 (Figure 1); our challenge has been how tactile sense share with others. In the most of massaging, the tactile sense produced by massaging are shared only between a person gives massaging and to be had it and it is difficult to share the tactile sense other than them. Hence, we have been doing bodyworkshops of tactile sense produced by massaging and exploring the way to share the tactile sense by everyone (Suzuki 2013).



Figure 1: Main workshop: (left) from Haptica bodyworkshop in Honen-in Temple, Kyoto, (right) from the invited workshop in the International Symposium on Multi-sensory Design, Nagoya University, 2006.

We have mainly developed bodyworkshops by massaging but we also have been organized workshop by using artworks for the tactile sense, where we have created artworks to induce the tactile sense by toughing it, for example we created artworks by using various sizes of balls; they were placed in a dark tunnel and participants entered into the tunnel and crawled along the tunnel; the size of balls increased from small to large. The size of balls are 2 or 3cm near the entrance of the tunnel and the size of balls gradually increased, and at the exit of the tunnel there was a large ball whose diameter is about 1 meter; hence participants can sense the difference in the size of balls by their whole body (Figure 2).



Figure 2. Bodyworkshop at Aichi Children’s Center, this artwork (sensing small and large by your whole body) is produced by Rieko Suzuki.

## 2. Tactile Score

From the experiences in bodyworkshops and cosmetic treatments of massages in beauty salon, we have explored the way of sharing tactile sense with each other; in our bodyworkshop we have been interested in massaging, because massaging is common in daily life and it exists in-between a person who massages and to be massaged, where it can be regarded as the person to be massaged also gives massage, hence massage is like “clap” by hands, it is produced by left hand and right hand and it can not to be generated by one hand. Hence we have developed the notation for describing the tactile sense of massage with refereeing to the music score.



steady rhythm evokes the sense of security in babies.

In other words, counts and rhythm are important in tactile perception. We suppose the basic “count” of massage is the circular stroke from the base point. Just like when one is patted on the shoulder, a single stroke could not be distinguished from a mere rubbing and it required more than double strokes to be recognized as massage. This set of double or more strokes was considered as the basic element. Counts were alphabets of massage, basic elements were words, and the combination of words corresponded to massage. We have conjectured the existence of principle in tactile sense such as massaging and we are able to investigate the “grammar” of tactile sense by using tactile score and development of the language of tactile sense will be able to apply in broad area such as scientific communication, education, engineering and so on.

### **Acknowledgements**

JSPS KAKENHI Grant Number 90217513 and 50177044 supported this work.

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