



University  
of Glasgow

# Human Senses & Poetry

Dr Ourania Varsou

Lecturer in Anatomy

[@OuraniaVarsou](#)

[Ourania.Varsou@glasgow.ac.uk](mailto:Ourania.Varsou@glasgow.ac.uk)



# What Are the Human Senses...?

Process of perceiving, interpreting & responding to our external environment

## ❖ Traditional Senses

- Touch
- Sight
- Hearing
- Smell
- Taste

## ❖ Other Senses

- Sense of Space
- Balance
- Vibration



# Revolutionary Breakthroughs!

## Study of the Human Brain

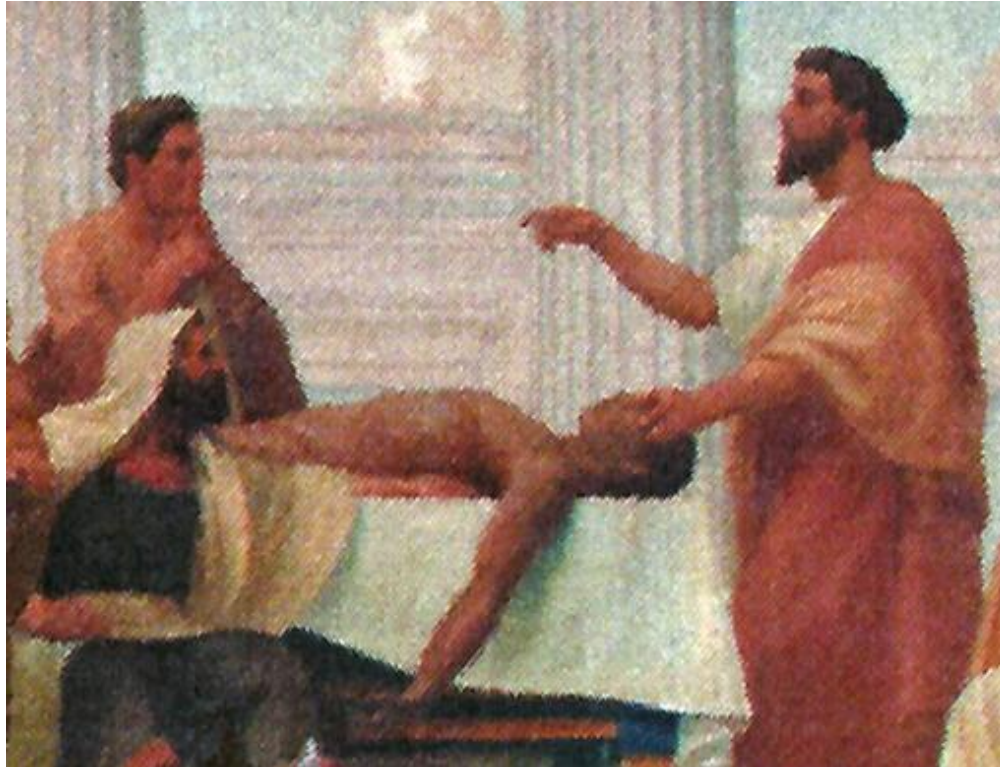
- ❖ Herophilus of Chalcedon has been called the 'Father of Anatomy' & has been accredited as the first to conduct both human & animal dissections<sup>1</sup>
- ❖ Herophilus of Chalcedon recognised the **human brain as an organ of the nervous system** that he distinguished from the cardiovascular system by conducting dissections<sup>1,2</sup>
- ❖ Herophilus of Chalcedon consolidated the view of the **human brain as the seat of our intelligence** (i.e. thoughts, reasoning, senses)...not the heart!<sup>1</sup>

1. Klenerman, L., 2015. Human Anatomy: A Very Short Introduction. OUP Oxford.

2. Panegyres, K.P. and Panegyres, P.K., 2016. The ancient Greek discovery of the nervous system: Alcmaeon, Praxagoras and Herophilus. Journal of Clinical Neuroscience, 29, pp.21-24.



# Brain...Seat of Our Intelligence



**Scientific Medicine (1906) by Veloso Salgado**  
**Herophilus of Chalcedon Teaching**  
Image reproduced from Veloso Salgado<sup>1</sup>

1. Scientific Medicine (1906) by Veloso Salgado [public domain]. NOVA Medical School, Lisbon.  
[https://commons.wikimedia.org/wiki/File:Herophilus\\_\(1906\)\\_- Veloso\\_Salgado.png](https://commons.wikimedia.org/wiki/File:Herophilus_(1906)_- Veloso_Salgado.png) [accessed 25/02/2019].



# Encephalocentric Theory

## Study of the Human Brain

- ❖ Herophilus of Chalcedon & Erasistratus of Ceos introduced an **encephalocentric** theory<sup>1</sup>
- ❖ This was in contrast to the prevailing Aristotelian cardiocentric theory that was holding the heart as the organ of intelligence<sup>1</sup>
- ❖ Erasistratus of Ceos also distinguished nerves into two types: those of movement & those of **sensation**<sup>1</sup>

1. Pearce, J.M., 2016. Greek medicine: a new look. *Brain*, 139, pp.2322-2325.



# *‘Though He Sees the Truth, He Does Not Use it’<sup>1</sup>*

- ❖ Neurology & neuroscience are comparatively ‘young’ academic fields
- ❖ **Systematic** clinical observations & interventions only started from the 16<sup>th</sup> century onwards
- ❖ There are still many ‘mysteries’ & ‘myths’ associated with the structure & function of the nervous system



*Galen.*

**Galen of Pargamon**

Image reproduced from Science Museum<sup>2</sup>

1. Hajar, R., 2011. Medical illustration: art in medical education. Heart Views: The Official Journal of the Gulf Heart Association, 12(2), p.83.
2. <http://broughttolife.sciencemuseum.org.uk/broughttolife/people/galen> [accessed 25/02/2019].



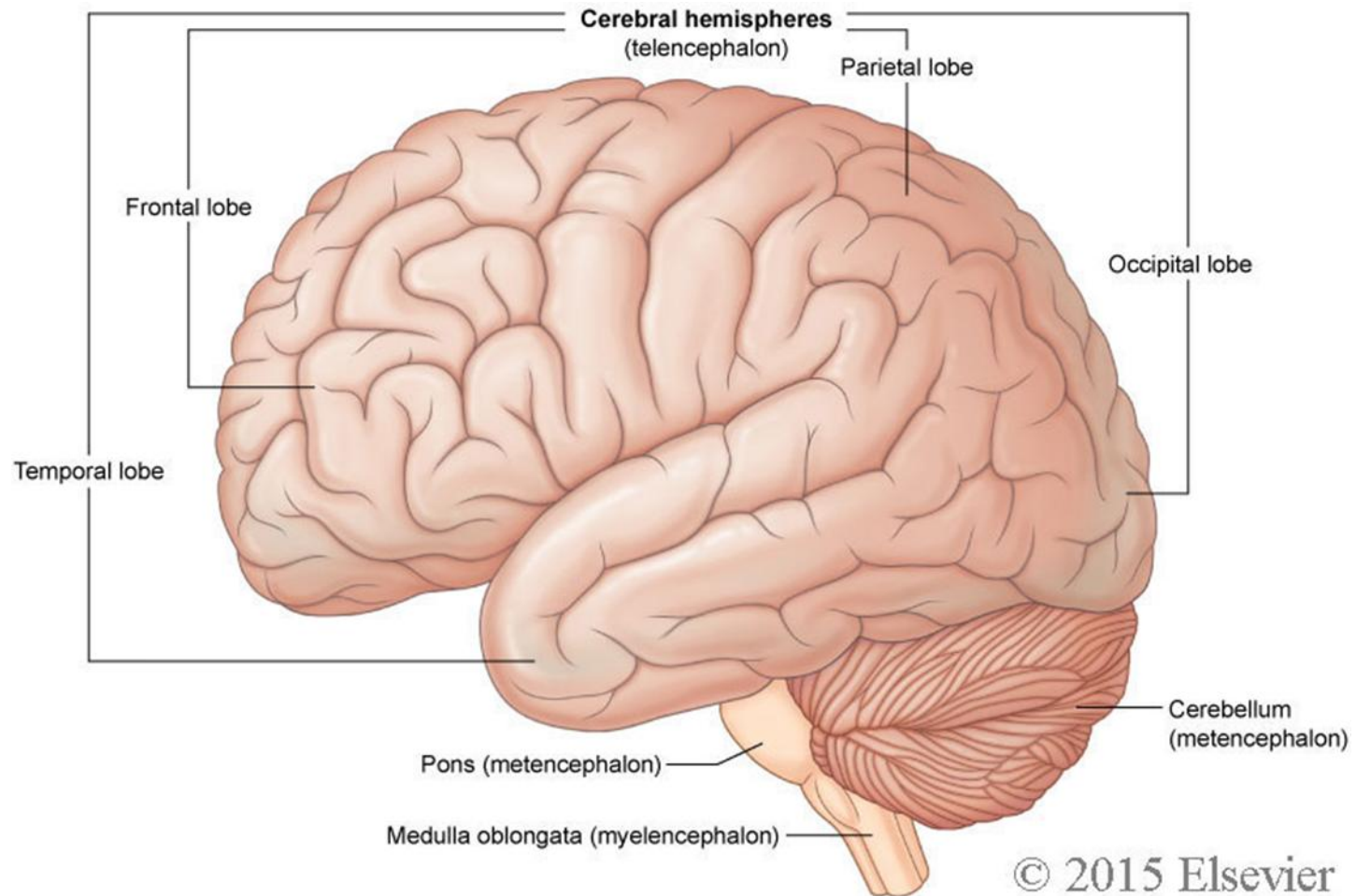
# Right vs Left Hemisphere: Question....?

**Can medical doctors become rounded & holistic in their approach?**

**How can medical doctors become rounded & holistic in their approach?**



# Brain Topography



© 2015 Elsevier

Fig. 8-36. Lateral view of the brain.





# Brain Topography

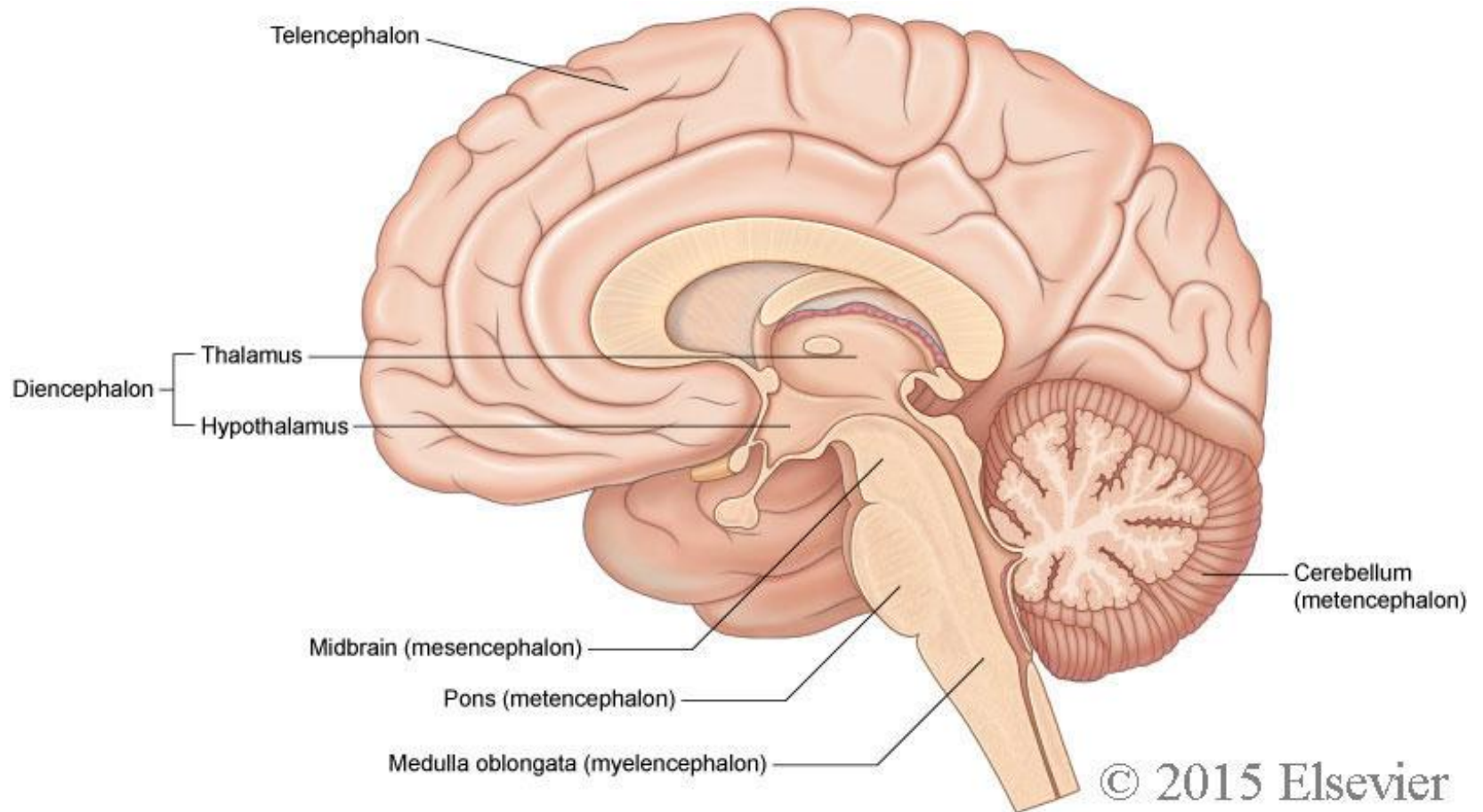
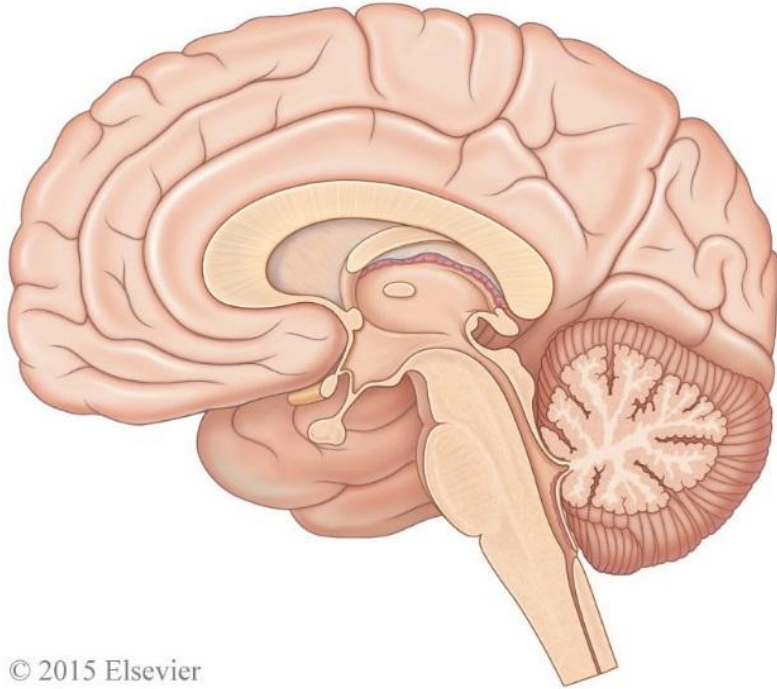


Fig. 8-37. Sagittal section of the brain.

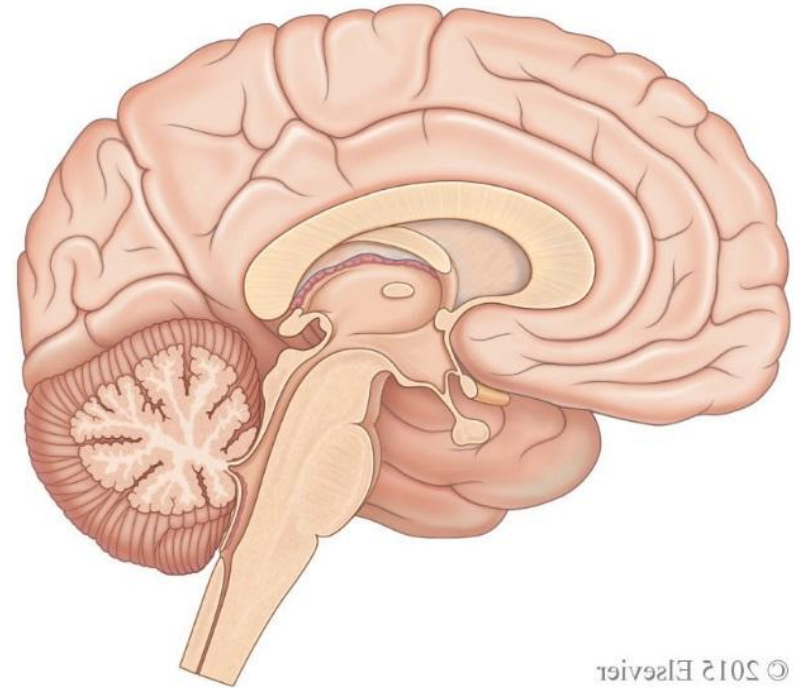
# Right vs Left Hemisphere



© 2015 Elsevier

Fig. 8-37. Sagittal section of the brain.

Copyright © 2015, 2010, 2005 by Churchill Livingstone, an imprint of Elsevier Inc.



© 2015 Elsevier

Fig. 8-37. Sagittal section of the brain.

Copyright © 2015, 2010, 2005 by Churchill Livingstone, an imprint of Elsevier Inc.

## **Right Hemisphere (Art)**

Creativity & Intuition  
Expressing Emotions  
Recognising Images, Faces, etc.  
Holistic Thinking

## **Left Hemisphere (Logic)**

Critical Thinking  
Language  
Reasoning  
Numerical Skills

**dominant hemisphere**

1. Kafaji, T., 2016. Chapter 14: Left Brain vs Right Brain. In: The Sly Mind: The Structure of Human Mind and Its Refusal to Be Controlled [The Mischievous Imp]. Partridge Publishing Singapore.



# Right vs Left Hemisphere

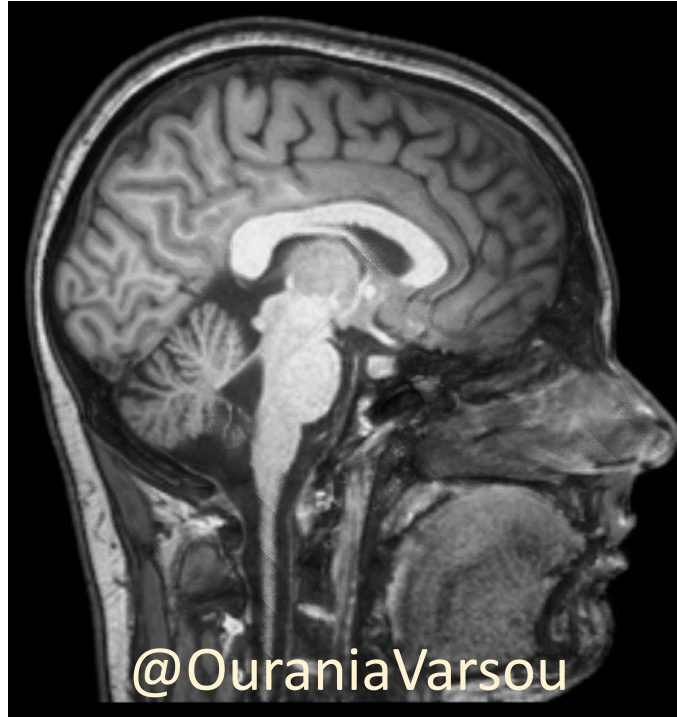
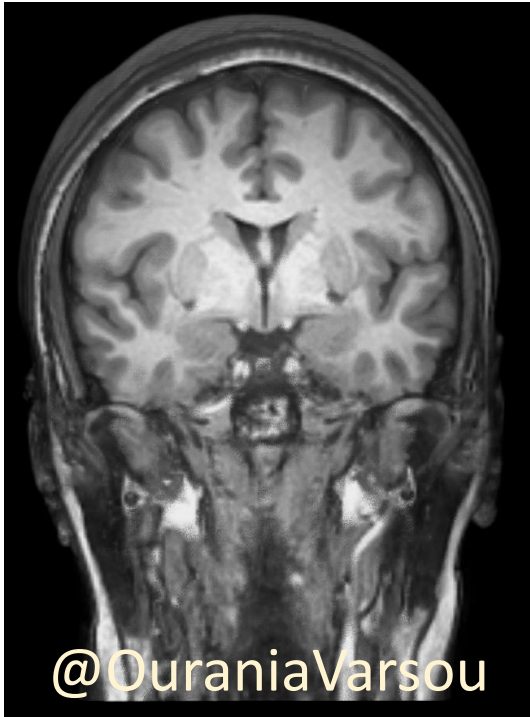
## Brain Lateralisation Theory

- ❖ Developed by Roger W. Sperry while studying the effects of epilepsy<sup>1</sup>
- ❖ Roger W. Sperry was awarded the Nobel Prize in 1981<sup>1</sup>

*‘Our understanding of mind-brain interaction has been vastly altered by studies that now offer a clearer picture of the two brain hemispheres & their specialised forms of intellect’<sup>2</sup>*

1. Kafaji, T., 2016. Chapter 14: Left Brain vs Right Brain. In: The Sly Mind: The Structure of Human Mind and Its Refusal to Be Controlled [The Mischievous Imp]. Partridge Publishing Singapore.
2. Sperry, R.W., 1975. Left-brain, right-brain. Saturday Review, 2, pp.30-32.

# Right vs Left Hemisphere



Corpus  
callosum

- ❖ It is **NOT** a simple dichotomous division (right vs left)!
- ❖ Some functions tend to take place more so in one hemisphere than the other most likely to maximise efficiency<sup>1</sup>
- ❖ The human brain is carefully balanced to perform functions as one unit<sup>1</sup>

1. Kafaji, T., 2016. Chapter 14: Left Brain vs Right Brain. In: The Sly Mind: The Structure of Human Mind and Its Refusal to Be Controlled [The Mischievous Imp]. Partridge Publishing Singapore.



## Food for Thought...

*‘When we first launched our investigation into the functional role of the brain connections, one of the first things we learned was how much we had to **unlearn**’<sup>1</sup>*

1. Sperry, R.W., 1975. Left-brain, right-brain. Saturday Review, 2, pp.30-32.



# Right vs Left Hemisphere: Question....?

**Can medical doctors become rounded & holistic in their approach?**

**How can medical doctors become rounded & holistic in their approach?**

# What is Synaesthesia...?

## Etymology

- ❖ **Syn-** (σύν; together) & **-aesthesia** (αἴσθησις; sensation)

## Definition

- ❖ It is **NOT** a merging of senses<sup>1</sup>
- ❖ It is **NOT** purely sensory<sup>1</sup>
- ❖ **Pairing of stimuli with resultant, but unexpected, experiences<sup>1</sup>**
- ❖ Triggered by language comprehension (high-order cognition)<sup>1</sup>
- ❖ 88% of synaesthesia triggered by language units including graphemes, phonemes & words<sup>1</sup>



# Synaesthesia Examples

**See colours when hearing sounds such as music**

**Feel certain tastes when hearing words**

**See colours from alphabetic letters (e.g. a = red)**

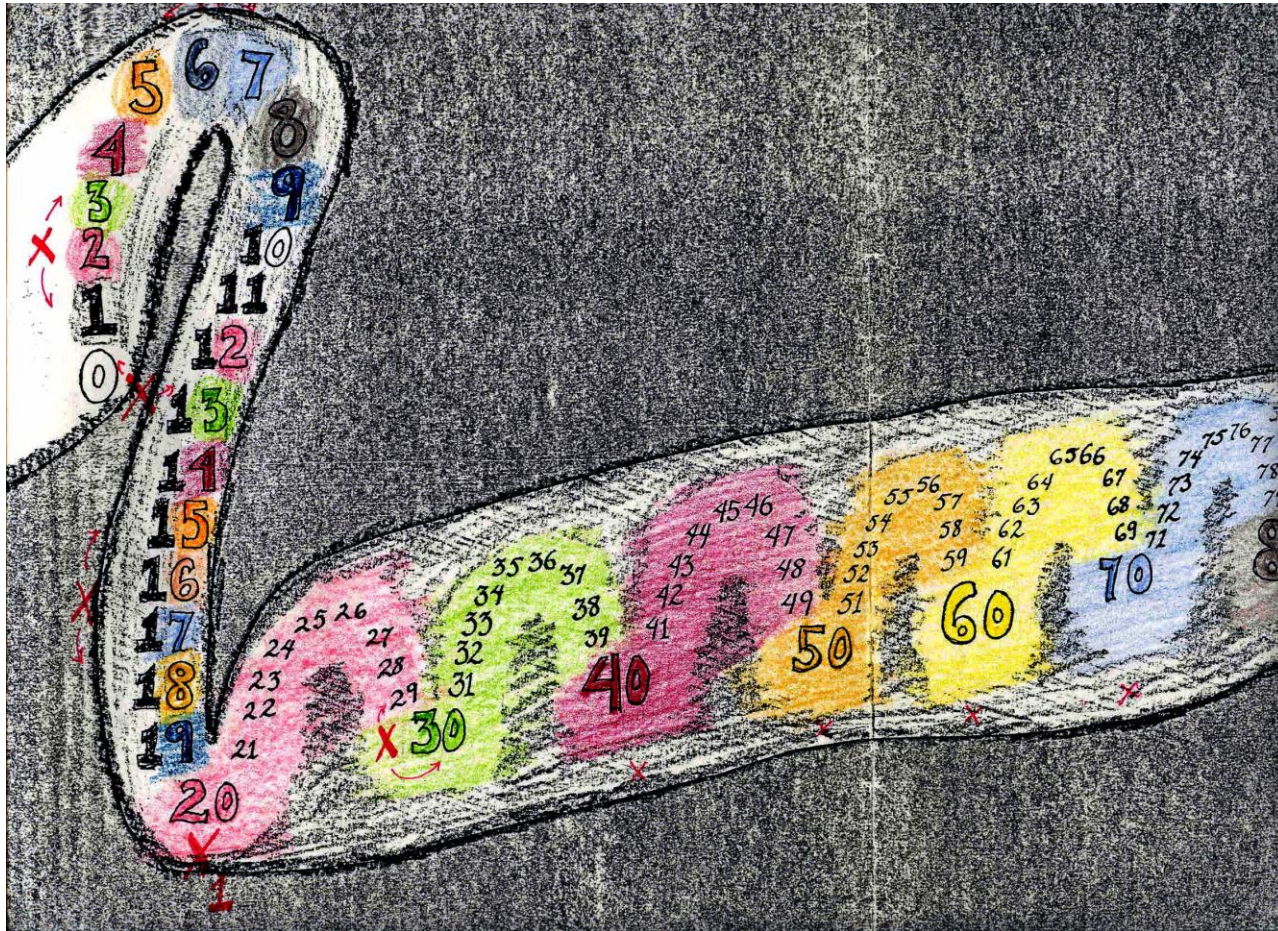
**See colours when imaging words...**

**High-order cognition**





# The Colours of Numbers...



Synesthetic number form. Richard E. Cytowic, from Cytowic & Eagleman (2009),  
“Wednesday is Indigo Blue: Discovering the Brain of Synesthesia.” MIT Press.



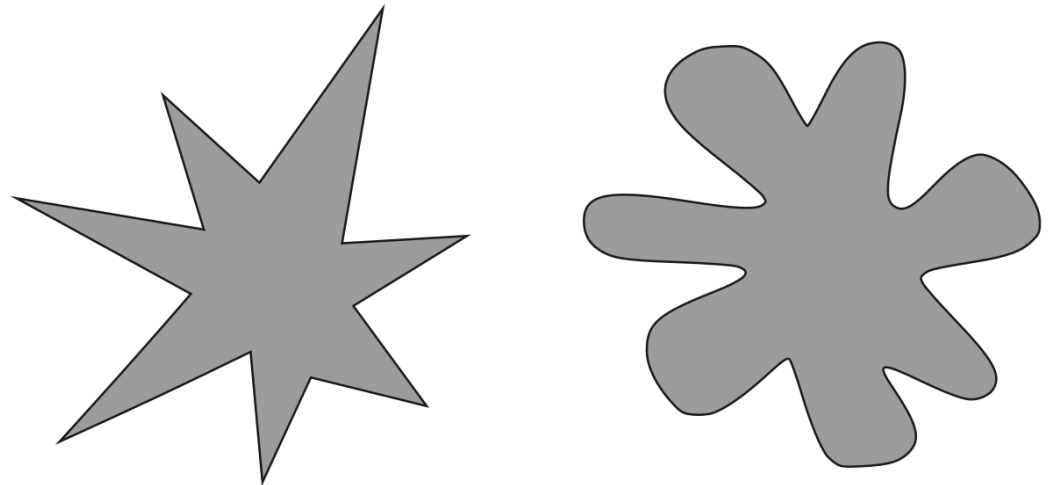
# Synaesthesia: Question...?

What does **RED** mean to you?

Which is Bouba?  
Which is Kiki?

- ❖ 95% to 98% associated the curvy shape with bouba & the jagged with kiki<sup>1</sup>
- ❖ The human brain attaches abstract meanings to shapes & sounds in a consistent way<sup>1</sup>

## Bouba - Kiki Effect



Monochrome version by Bendž Vectorized with Inkscape, 23 June 2008 (UTC) [CC BY-SA 3.0 (<http://creativecommons.org/licenses/by-sa/3.0/>)]

1. Ramachandran, V.S. and Hubbard, E.M., 2001. Synaesthesia—a window into perception, thought and language. *Journal of Consciousness Studies*, 8(12), pp.3-34.

# How Does This Relate to Poetry?

## Poetry

- ❖ Written poetry is an integral component of human literature
- ❖ Spoken poetry existed even when literacy was not evolved!

## Research

- ❖ Reciting poetry is a stimulus for eliciting peak emotional responses, including chills & objectively measurable goosebumps, that engage primary reward areas of the brain<sup>1</sup>
- ❖ Poetry can increase emotional intelligence<sup>2</sup>

1. Wassiliwizky, E., Koelsch, S., Wagner, V., Jacobsen, T. and Menninghaus, W., 2017. The emotional power of poetry: Neural circuitry, psychophysiology and compositional principles. *Social Cognitive and Affective Neuroscience*, 12(8), pp.1229-1240.
2. Morris, J.A., Urbanski, J. and Fuller, J., 2005. Using poetry and the visual arts to develop emotional intelligence. *Journal of Management Education*, 29(6), pp.888-904.



# Why, Why, Why?

**Empathy**

**Compassion**

**Communication Skills**

**Resilience**



# Last Thoughts...

## **Lost**

Sweet taste of madness,  
deluging the naive soul,  
possessing the spineless body.

Overwhelming sensation of bizarre ideas,  
suffocating the unbearable truth,  
leading to everlasting ignorance.

Ceaseless melody of unreal voices,  
destroying every last piece of sanity,  
mutilating the already broken mind.



University  
of Glasgow

# Thank you for listening!

[@OuraniaVarsou](#)

[Ourania.Varsou@glasgow.ac.uk](mailto:Ourania.Varsou@glasgow.ac.uk)